

Virginia Wildlife

JUNE 1976

VOLUME XXXVII NUMBER 6
20 CENTS



Virginia Wildlife

June, Volume XXXVII/No. 6

Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources

COMMONWEALTH OF VIRGINIA
MILLS E. GODWIN, JR., GOVERNOR

Commission of Game and Inland Fisheries

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Virginia Wildlife is published monthly in Richmond, Va. by the Commission of Game and Inland Fisheries, 4010 W. Broad St. All magazine subscriptions, changes of address and inquiries should be sent to PO Box 11104, Richmond, Va. 23230. The editorial office gratefully receives for publication news items, articles, photographs and sketches of good quality which deal with Virginia's soils, water, forests and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and *Virginia Wildlife*, but clearance should also be obtained from contributing free-lance writers, artists and photographers to reproduce their work.

SUBSCRIPTIONS: One year, \$2; three years \$5. Make check or money order payable to Treasurer of Virginia and send to Commission of Game and Inland Fisheries, P.O. Box 11104, Richmond, VA 23230.

Observations, conclusions and opinions expressed in *VIRGINIA WILDLIFE* are those of the authors and do not necessarily reflect those of the members or staff of the Commission of Game and Inland Fisheries.

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COVER PICTURE: Gnatcatcher by Rockne Knuth
Fond Du Lac, Wisconsin

Editorial

THE CLARENCE THE QUAIL SYNDROME

A recent syndicated newspaper columnist reported on a quail named Clarence illegally raised in captivity by a 14-year-old boy and his temporarily successful battle to keep it. Although the article exploited the case largely for its humor it presents a favorite story plot for newspaper writers. Some good samaritan rescues some young animal from real or imagined danger and single-handedly nurses it to health or raises it to near-adulthood only to find the big bad Game Commission knocking on his door to take it away. Unmoved by his pleas and tears, the hardhearted conservation officers unceremoniously whisk the animal away to some unknown fate. The article is usually accompanied by a photo of the cute, innocent animal and the tear-stained face of the distraught foster parent, all of which can stir a public outcry just short of riot proportions. A recent case in New York made national news when the conservation officers had the bad luck to over-tranquillize a deer they were confiscating and it died while the anguished foster parents watched.

In spite of being cast as villains in these stories, Game Commissions have the best interests of both the citizens and the wildlife at heart. Wildlife is always better off in its natural habitat than in the most sophisticated of confinement. A wild animal has been selectively bred for thousands of years to survive in the environment in which it lives. Most foster parents aren't even capable of duplicating survival conditions let alone an environment in which the animal will be healthy and content.

Wild animals are not domesticated in one generation and their wild instincts always take over in tight spots. When the animal is frightened, hungry, sexually aroused or prompted by any one of dozens of other natural stimuli it can lash out unexpectedly and injure its captors. When animals reach sexual maturity, especially the male, even the most docile often become untrustworthy.

But even more sad than the possibility of damage to captor or captive is the fact that these animals are most always worthless misfits, a total waste. They are neither wild nor tame, too rambunctious to hold captive but not capable of making their own way in the wild if released. In a recent case in Maryland a driver encountered a deer standing in a rural roadway. He got out to shoo the deer away and was immediately attacked and gored. His wife sprang to his rescue and was herself attacked and injured by the animal. A passing hunter finally succeeded in dispatching the angry animal which turned out to be someone's recently released pet. Had the animal been left alone in the wild it might have been a useful member of the wildlife community.

Man's compulsion to cuddle soft furry things is akin to the black widow's habit of killing her mate as far as wildlife is concerned. This midas touch is often put forth by wildlife lovers as their finest contribution to the welfare of wildlife. It will take more than tears and misplaced affection to save the world's wildlife. Next time you are tempted to "save" some hapless wild creature stop to think what you're saving it from. A normal happy life, probably.

-HLG

Letters

FESCUE ME FOR ASKING

Does the eating of fescue grass have a bad effect on rabbits? I have heard this discussed several times.

Hester L. Clark
Meherrin

In spite of its apparent dangerous qualities, we have no reason to believe that fescue is harmful to rabbits that eat large quantities. We have a research project under way at present in which rabbits are being fed fescue to settle this controversy.
—Ed.

MAN'S BEST FRIEND

In regards to a letter in the February issue "Dogs a Lazy Hunter's Crutch," evidently Mr. Hardisty has never had an opportunity to shoot a big buck with the sound of ten or more walker hounds com-

ing toward him in full cry. Yes, we use C.B.'s and pick-up trucks, but are used mostly to round up dogs.

Hunting with dogs has been the rule of hunting in my county which is Southampton and we have the best deer herd in the state. All due to good sportsmanship which has made it so.

Lon S. Marks
Capron

REBEL GO HOME!

Bear hunting scenes in "the Guns of Autumn" reminded us of this gem:

Many years ago, the people of Maine became embittered with the rest of the country. No wonder! They suffer terrible winters, live on potatoes and trout, farm in rockpiles and hate everybody.

Some years later, a guy found a way to get even with everybody. He called it "Hunting Bear Over Bait." It works like this. The unsuspecting Virginian, North

Carolinian or Marylander is taken miles from camp, over the bumpiest roads available. He is put in a tree stand, which may fall any minute. He is convinced to stay in the blind a minimum of six hours. Sometimes an expert torturer can get you to stay nine. During this time, you are subjected to the most putrid odors imaginable. Finally, when loneliness and fear have you almost to the breaking point, you are picked up. The return trip is worse as the guide has found a bumpier road back to camp. You are fed your meal around midnight and rushed off to bed.

Next morning, you want to go trout fishing, but this is reserved for the natives. It just happens that the guide has many baits to check, 50 to 100 miles away. By the time you've ridden that far, it's time to go to the blind again. After a few days of this the hapless hunter goes home and the natives await the next sucker.

Byron E. Wates
Fairfax



NORTHWEST RIVER

By ROBERT G. MARTIN
Chesapeake



Let me tell you about Northwest River. The Northwest River that I know is a coastal waterway that lies in a topographical triangle formed by the eastern tips of Virginia and North Carolina. Paradoxically the river is named Northwest, presumably because it flows from that direction toward the sea. Originating in the fringes of Great Dismal Swamp and approximately 15 miles later assimilated by the brackish Tull's Bay section of Currituck Sound, this river has as many stories as there are cypress knees along her shores.

It is obvious that Northwest is not a big or mighty river. In fact there is some argument, does it indeed flow at all as rivers usually do? This question can be answered to suit either the affirmative or negative point of view. Fed by runoff from rain on adjacent farms and swamps, apparently augmented to some extent by underground sources, the river does not exhibit flow or current that is readily discernible most of the year.

With the exception of times of heavy rain the level of this river is ordained by the wind. When fishermen and boaters here speak of the tide on the river, they mean wind tide. It is imperative to the fisherman's success for him to be able to read the wind and its effect on the water level. Many fishermen, bass enthusiasts especially, feel that high water levels are best. Others find that very high water enables fish to venture deeply into the shoreline and cypress knee cover. In this maze it is extremely difficult to lure them to the bait. On many an otherwise perfect morning or evening I have been frustrated by the sound of fat bluegills smacking away voraciously at insects far too deep in the marsh grass and cypress for my popping bugs to reach.

My first acquaintance with the river was about 20 years ago. That was before the weekends of wall-to-wall boaters that you can expect today. At that time there were only two small fishing establishments that sold tackle, bait, license to fish and rented boats. These places were built one on each side of highway 168 north of the bridge. The bridge stands in Virginia a short distance from the Virginia-Carolina line. Most vacationers bound for the outer banks will recall this humpback, two-lane concrete bridge. It was there I purchased my first Virginia fishing license and rented a pram. With an ancient 7½-horsepower outboard doing the labor we moved upstream in search of a likely looking fishing hole.

The entire shore looked great the moment we left the entrance ditch at the landing. It wasn't long before we began working the banks along small cypress islets. Our quest was for bluegill, bass or any other fish that would take the hook. I was a stranger to this river. My host had lived in the area for some time, but was a neophyte on this water. He was a native of Florida and should have known better, but he allowed the boat to drift under an overhanging tree limb. There were three of us in the boat, not one noticing the reptilian menace that lay sunning himself on that limb. The mammoth cottonmouth dropped beside us into the water, missing our boat by the narrowest of margins. We were glad, since there simply wasn't room for four of us in that pram. That was the first cottonmouth moccasin I'd ever seen in the wild, but surely not to be the last. Northwest River is prime habitat for them. In recent years the influx of more and more people and the relentless pressure of civilization have taken their toll. The cottonmouth is not seen as frequently now. Either they have been driven into the swamp or their numbers are declining along the river. Many would not mourn their demise, but they are a vital link in the ecological chain. Also, to this observer they provide esthetic enjoyment - from a safe distance. Often I've sat motionless in a boat a few yards from the banks and watched several moccasins at a time slither along the mud which was exposed in dry weather and low tide. There is a frightening yet fascinating beauty about these crea-

tures that conjures up visions and creates an atmosphere from an earlier primal day on this planet.

Over the years as I became more and more familiar with Northwest River, I extended my range downstream until I had fished every creek and shoreline to the state line. Down there the river broadens and takes on the appearance of a small lake. The shore becomes less densely wooded, although cypress trees are still plentiful and in sufficient quantity to furnish a decorative border on the water's edge. The river mirrors greens, blues and yellows during spring and summer; amber, deep orange and browns in the fall; black and purple at nightfall and an ominous brownish gray-green in stormy times. There, where the banks have changed to mostly marsh grass and the cypress trees have thinned, one can determine the superb conical shapes of individual trees and ponder about the fantastic landscape artist who arranged them so.

There's another face of Northwest River. Not far from Dismal Swamp is the headwater of the river. There is a little timber bridge that carries Bunch Walnuts Road over the stream. Here it is little more than a ditch a few yards wide and a couple of feet deep. Many a cold February afternoon I've spent along this creek in quest of chain pickerel. This is about the only time of year you'll find me willing to walk these banks. When the weather is decent there is too much likelihood of rattlers (canebrake) or copperheads and cottonmouths. During these gray winter days we take brackish water minnows and work the drifts and under the bridge for pickerel. Mostly they are small, but an occasional two-pounder keeps things interesting.

From this bridge downstream winds approximately five miles of twisting, turning, cypress (juniper) lined water to the bridge on highway 168. There are some deep holes at intervals in the stream at this area and it has widened to 50 or 60 yards. There is good bluegill and crappie fishing along this stretch. One crisp Sunday morning in early April about two years ago we set out in a canoe from the Bunch Walnuts bridge. Taking photos, fishing sporadically, bird watching and picnicking, we made our way the five or so miles to highway 168. Appallingly evident however, was a river growing ill. Unusual and uncharacteristic growth of algae was noticed. There was floating debris of varied types. Garbage and refuse marred much of the shoreline. Most of the debris was obviously far from being bio-degradable. Signs of fish and game were few. As our trip drew to a close and we floated into the wider stretches of the river, there was a noticeable improvement. But the obvious projection for the future was ominous.

During the past several years the City of Chesapeake, through which Virginia's section of Northwest flows, has tried in vain to gain permission to dam the river along the line of highway 168. The expressed purpose of the dam was to furnish water for residents and commercial interests in the city.

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Weather or Not

By MARIE CICCHINELLI

Next time you see a young boy in his skiff seeking shelter from a squall, a family huddled under a picnic table with the wind and rain raging all about them or a pair of shivering nimrods trudging through four inches of "partly cloudy;" ask them what they would wish for if they could. Their answer just might be a unified cry. "A perfect weather forecast!"

If only there was such a thing. Since most of our activities depend on the state of the weather, why risk having your outing cut short when it changes? Do something about it. Learn how to forecast the weather.

To an extent we are all amateur meteorologists. We are constantly changing our clothes and plans at its whim. Since we cannot change the weather very much, simple weather forecasting can teach us many of the patterns and signs of the weather that can increase our appreciation and enjoyment of the outdoors.

Forecasting, whether it is done by the U.S. Weather Bureau with its multi-million dollar facilities or you

and your own personal observations, is the result of past, current and developing weather conditions. Even with all its manpower, computers and equipment, the Weather Bureau's predictions are still based on educated guesses.

Air masses are continents of atmosphere carrying uniform temperatures and moisture from its source region that cause our weather. Because weather changes daily in temperature, wind, moisture and air pressure; once you know which air mass is where and the direction and speed it is probably headed, half your prediction is made. The U.S. is affected by four basic air masses: Continental Polar (cold and dry), Maritime Polar (cold and wet), Continental Tropical (warm and dry) and Maritime Tropical (warm and humid). Maritime masses form over water and continental over land. Tropical masses are created in equatorial regions and polar originate near Arctic/Canadian areas.

These masses form, break loose and drift with the winds of the earth. The edges of these masses are called fronts. When air masses collide, storms and unsettled

FIGURE 1. WIND SPEED GUIDE

	MILES PER HOUR	BEAUFORT SCALE NUMBER	KNOTS PER HOUR	DESCRIPTION OF NATURAL EFFECTS ON LAND & SEA
Calm	0-1	0	0-1	Smoke rises straight up. No movement of any kind. Sea is mirror smooth.
Light Air	2-3	1	2-3	Direction of wind is shown by smoke drifting slowly away. Tree leaves barely move. Weather vane not affected. Small wavelets.
Slight Breeze	4-7	2	4-6	Wind felt on face. Leaves rustle slightly. Weather vane begins to shift if it is free swinging. Short waves.
Gentle Breeze	8-12	3	7-10	Leaves & twigs constantly move. Loose bits of paper ruffle & lift.
Moderate Breeze	13-18	4	11-16	Small branches move. Loose dust & paper are blown along. White horses form on sea waves.
Fresh Breeze	19-24	5	17-21	Large branches & small trees begin to sway. Dust clouds appear. Crested waves form on inland water.
Strong Breeze	25-31	6	22-27	Large branches in constant motion. Wind & telegraph wires begin to whistle. Umbrellas become unwieldy. Waves reach 12 feet high.
High Winds	32-38	7	28-33	Whole trees are in motion. Walking against wind is awkward.
Gale	39-46	8	34-40	Twigs begin to break off. Walking becomes difficult. Cars veer on road.
Strong Gale	47-54	9	41-47	Slight structural damage. Roof slates blow away. Whole branches break. Signs blow down.
Whole Gale	55-63	10	48-55	Trees snap or are uprooted. Heavy structural damage.
Storm	64-74	11	56-62	Widespread damage. Occurs mainly on the East and Gulf coasts.
Hurricane	75 & over	12 over	63 & over	Severe destruction. Usually hits Gulf coast and moves northeastward to the coastal states. Waves higher than 45 feet.

atmospheric changes occur. The new air mass can be warmer or colder than the air it replaces.

Wind direction and speed show the intensity and path of air masses. Winds are named from the direction they blow. So a west wind blows from west to east. In the U.S., the prevailing wind (which indicates good weather) is westerly. In the summer, it is often southwesterly and in the winter north-westerly. A non-prevailing wind comes from another direction and signals an approaching storm.

Here is a handy rule to know. If you face the wind and point to your right you will locate a storm's, or low pressure, center. This is an excellent way to pinpoint and follow the eye of a hurricane.

Barometric or atmospheric pressure is caused by variations in temperature. It is the weight of air pushing on the earth's surface. Warm air, because it weighs less and exerts less pressure, creates a low pressure area that is cloudy with rain or snow. Cold air creates a high pressure area, bringing clear skies and colder winds.

Clouds are masses of condensed water vapor. Their type, height and appearance can tell you a great deal about what air mass surrounds you and what mass may come.

Cumulus clouds, cauliflower-like, usually indicate a cold front or mass and the possibility of short, hard rain followed by clear skies. The higher and fluffier the clouds are, the drier and longer fair weather will last.

Stratus clouds, flat and layered sheets, signal warm air and fronts with gray, low, cloudy skies and a long, steady drizzle until a cold air mass replaces it.

Most important, take a meteorological field trip and get acquainted with the terrain of the area you wish to

forecast. Valleys, woods, open land, even your neighbor's fence influence the accuracy of your prediction.

Consider your proximity to the Chesapeake Bay and the Atlantic Ocean. People along these coasts may notice frequent changes in the wind direction in the form of land and sea breezes. Their effects may be felt 15-30 miles inland. Since land warms and cools more quickly than water, coastal areas tend to have cooler summers and milder winters. Thus, rain along the coast might be snow inland.

Next time you are down by the ocean try this method to predict a storm. In fair weather, salt water evaporates fast and this causes a haze and poor visibility. If distant objects are clear and seem closer than they really are, expect rain within 24 hours.

Your most successful forecasting can be done with a few dollars worth of equipment, daily observations and a weather diary. It only takes a few moments to record your findings. Although each weather situation has its own unique behavior, you can detect general patterns that combinations of certain elements usually follow. Keeping a written record of your observations and referring back to them will not only increase the accuracy of your forecast, it may help you avoid a real disaster. For example, hurricanes are born as tropical lows. A few hundred miles from the center, cirrus clouds thicken and build up rapidly into cumulonimbus, the wind increases, the barometer falls, and rain starts to fall. If it happens to be hurricane season, August to November, and you see these signs you will know to head for shelter. In your diary briefly describe the wind direction and speed, cloud forms, humidity, temperature, precipitation and any other noteworthy signs including whe-

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FIGURE 2. WIND DIRECTION & BAROMETRIC PRESSURE GUIDE

WIND DIRECTION	BAROMETRIC PRESSURE	TYPE OF WEATHER TO BE EXPECTED
SW to NW	30.10 to 30.20 & steady	Fair, with little temperature change for the next day or two.
SW to NW	30.10 to 30.20 & rising rapidly	Fair, followed by warmer weather. Possible rain within two days.
SW to NW	30.20 or above & steady	Continued fair, with little or no temperature change.
SW to NW	30.20 or above & falling slowly	Fair, with slowly rising temperature for the next day or two.
S to E	30.20 & falling rapidly	Wind rising in force. Rain within 12 to 24 hours.
SE to NE	30.10 to 30.20 & falling slowly	Rain within 24 hours
SE to NE	30.10 to 30.20 & falling rapidly	Increasing wind. Rain within 12 hours.
E to NE	30.10 or above & falling slowly	In winter, rain or snow within 24 hours. In summer, rain may not fall for two to four days. Light winds.
E to NE	30.10 or above & falling rapidly	In winter, rain or snow with increasing winds within 12 hours. In summer, probable rain within 24 hours.
SE to NE	30.00 or below & falling slowly	Steady rain will continue for another day or two.
SE to NE	30.00 or below & falling rapidly	Rain with high winds. Clearing & colder within 36 hours.
S to SW	30.00 or below & rising slowly	Clearing within a few hours & remaining fair for several days.
S to E	29.80 or below & falling rapidly	Severe storm imminent. Clearing within 24 hours. In winter, followed by colder weather.
E to N	29.80 or below & falling rapidly	Severe northeast gale & heavy rain. In winter, heavy snow followed by cold wave.
Returning to W	29.80 or below & rising rapidly	Clearing & colder.

A BIRD IN HAND

By CHARLES R. BLEM

Virginia Commonwealth University, Richmond

Every spring I receive many telephone calls requesting information on the care and feeding of nestling birds. I always warn the caller of two things: (1) it is an infraction of both state and federal laws to keep any wild bird except starlings or house (English) sparrows, and (2) even with the most conscientious care, chances of a young bird surviving human captivity are low.

Before attempting to care for a young bird, every effort should be made to determine that it has really been abandoned. Returning a young bird to its nest, replacing a nest and young to their original place in a tree, or simply placing a well-developed young bird in a concealed place in a tree may be enough to allow the parents to return and resume their duties. Young birds that you touch will not necessarily be deserted by the parents. Most often adults will abandon the young only if you frighten them from the nest or if they see a human handling their young. Older nestlings are less willingly deserted than eggs or very small nestlings. The adults cannot "smell" or otherwise detect your odor on the nestling. In fact, the parents may come from quite a distance to care for their young.

If you have positively determined that the parents are not going to return to their young, then you should assess your chances of hand-rearing the bird. If it is obviously sick or injured, the most humane thing may be to put it to sleep with chloroform or ether. It is really unwise to nurse a sick bird back to a state where it may be released to further spread disease or parasites. Broken bones are especially slow and difficult to heal. Also, very young birds whose eyes have not yet opened are quite fragile and only survive with considerable care and luck. If you still decide to try to save the young bird, the following suggestions may be of some help.

Keep the bird in a clean container so that he will not escape and be injured. A small cardboard box will be sufficient for very young birds. The container may be lined with cloth or toilet tissues so as to maintain a clean nest. Very young nestlings must be kept warm. Usually a desk lamp or other light bulb of low wattage (25W) will provide sufficient heat. Do not place the bird directly under the light. Very small nestlings may be covered loosely with cloth or tissue, and are best kept at 95°F or slightly warmer. Place the lamp at one

end of the box so the bird can adjust its temperature by changing position. Older nestlings require less heat and may become active. These should be provided a perch and may be given their freedom to exercise in a screened porch or the like. Hand-reared birds are slow to fly or learn to care for themselves. Exercise in larger spaces may encourage independence.

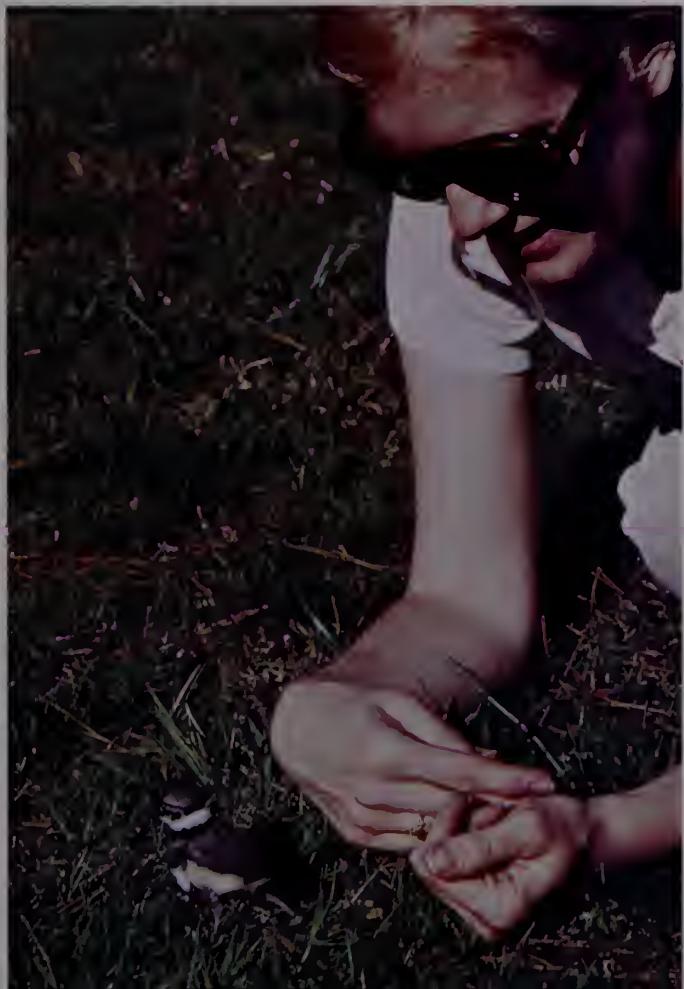
Most songbirds may be reared on a variety of foods. The most easily obtained food is regular dry dog or cat food. The pellets should be softened with water and sprinkled with a vitamin supplement. Addition of vitamins is essential, no matter what the diet, and may consist of commercial bird vitamins available at pet shops or from veterinarians. We have hand-reared nestlings on a special diet composed of the following: $\frac{1}{2}$ -cup wheat germ; 3 hard-boiled eggs with shells; 2-cups turkey or chick starter mash (medicated); 2 fourteen-ounce cans of cooked horse meat (available at the dog food shelf at your grocery); $\frac{1}{2}$ -ounce of vitamin supplement (Squibbs Vionate powder is excellent); 2-ounces molasses; $\frac{1}{4}$ -cup finely crushed oyster shell. Mix ingredients together in a blender or force them through a food grinder and mix. This makes about 3 quarts which we divide into portions and freeze until needed. We occasionally add finely ground raisins and/or a cup or two of a dried commercial preparation of "flies" sometimes sold as turtle food.

Young birds should be fed by forceps or tweezers as often as they beg for food (open their mouths and call). This will be every 20 or 30 minutes during the daytime for very young birds, less often for older birds. Young birds need not be fed at night. Older nestlings should be given live insects or fruit and encouraged to feed themselves. A source of live mealworms is especially helpful at this time. These can be obtained at pet shops, and a colony may be started at home in a container of corn meal, bran or oatmeal. You need not give the young bird water, as the moisture in the food should provide that. Older nestlings will occasionally take a drop of water from your finger, but do not put it in their mouth with an eyedropper as you may choke them. Bread and milk, strict diets of earthworms, or seeds are all nearly useless as diets for very young birds.

Young quail or ducks are relatively easy to care for as they will feed themselves, and a diet of medicated chick starter mash or commercial game bird starter is readily available at feed stores. Conversely, shore birds such as killdeer may be quite difficult to raise. The mix described above for songbirds is satisfactory, but must be hand-fed to the chick for a while, and supplemented with a variety of flies and worms. Fish-eating birds such as herons or kingfishers will readily take small fish. The fish should be small enough to be swallowed whole (including bones and the digestive tract) and should occasionally be sprinkled with vitamins. Young birds of prey (hawks and owls) may be raised on small whole mice, parts of freshly road-killed animals or chicken



parts (particularly the necks). The food should include hair, digestive tract and small pieces of bone, as young hawks and owls seem to require such roughage for normal digestion and as an added source of minerals. Young hawks are particularly difficult to raise. Further detail about caring for a variety of birds may be found in the books, *Bird Ambulance* by Arline Thomas (1971), and *Enjoy Keeping Wild Pets* by Rosemary Collett (1970).





MOUNTAIN LAKE: A Feeling of Wilderness

By JUDY PRICE



There are views that sweep thousands of green acres, and hemlocks that one man cannot encompass, nor two men with an embrace. There is a bog that reaches back through time, that stretches across half a continent; and streams, not untouched by man, for he too is inherent to the earth, sometimes uncaring, but undefeated. There are all the attributes of wilderness, all that can be

defined, and still there is more. About the Mountain Lake Wilderness Study Area, there is a quality, an indescribable feeling of wilderness: that which makes it more than a list of characteristics, of elements. There is the aura that declares it wilderness.

The Mountain Lake Wilderness Study Area has within its boundaries 8,400 acres of the Jefferson National Forest. It contains parts of both Virginia and West Virginia. In 1960, 1,500 acres in Virginia were declared a scenic area by the Forest Service. They have been protected, allowing no camping, no fires, since that time. In the scenic area, there is a network of trails leading to War Spur Overlook and the Virgin Timber Stand, then connecting with the Appalachian Trail that transverses the Wilderness Study Area.

Chestnut Trail, ending at War Spur Overlook, winds through what was once a forest of chestnuts, a forest lost to blight that ravaged half a century before, that holds the chestnut to a sapling size even now. Beneath the great oaks that have come after, the chestnuts survive. The roots of fallen ones still send up sprouts that grow into young trees, that sometimes flower and fruit, but never reach maturity because the fungus invades, splitting the bark, finally killing the tree.

As some believe, as many hope, the chestnut may eventually develop an immunity to the fungus; each sprout that rises from the roots living an instant longer, becoming a bit larger before expiring, until finally in a hundred years or a thousand or more, a mature chestnut will stand, and drop a fertile seed, and a forest of chestnuts will again shelter the Chestnut Trail, and the spiny green burrs will be full, and fertile - a promise of the future, rather than a token of the past.

The passing of forest to forest has a final stand. Those that have reached that end naturally without interference are called climax forests. In the scenic area there is a small climax forest called the Virgin Timber Stand. It is a forest of hemlocks, and of red spruces, bordered and underscored with rhododendron. Many of the hemlocks are greater than 11 feet in circumference, standing straight and high, singing more

vibrantly, sighing more heavily, dwarfing the ones beneath with their whorls of silver-strained green.

Beneath those imposing giants and the other trees that reach for the skylights lie the toppled ones, decaying, enriching the soil, building the earth. It is here, from the moist, black ground, that the small native flowers grow, the orchids, the heaths, the pale wintergreens, as it is from the sheer rock faces, the limestone and sandstone cliffs, that the small ferns hang their fronds.

The Mountain Lake area is ragged with sedimentary rock formations. Some, like War Spur Overlook, offer views, of hills and hollows, of great arcs of sky, and of tiny green fronds. The small spleenworts and polypodies grow here, setting their roots in the crevices. And their fronds flow out, or hug the cliffs, to soften the hard, stolid look of the stone.

Rare plants have been discovered in the Mountain Lake area, and are still being discovered. Unusual fern forms and varieties are collected from the cliffs and the forests, often by botanists and students from nearby Mountain Lake Biological Station, who record their findings, and preserve the rare specimens in the station's herbarium.

Recently, an osmunda fern was found in the vicinity of Mountain Lake, a fern almost mythological. It is a hybrid between the interrupted fern and the royal fern found only once before the Mountain Lake discovery, and then in a garden 35 years ago. During those years, as fern enthusiasts searched, its mere existence in the wild was questioned. Now, with this discovery, there is certainty, the questioning given reply, and there is speculation about where the fern may again appear, and of what other rare, perhaps unknown, species may exist about Mountain Lake.

In the Wilderness Study Area, at the origin of Little Stony Creek, there is another type of rarity, a land form uncommon to the Appalachians, the spruce bog. The bog is the southern counterpart of the northern muskeg, having different origins but similar form and vegetation.

Big Soft Sleep, also called Mann's Bog, and Big Good Bed, has the features of muskeg, the moss carpet, the stunted spruces, the rushes and sedges; and it has the character, the warmth and the frigidity. It is a bright rushing flood of sunlight, and yet it is dark and strange. There is a beauty about it as freakish and appealing as the bonsai, and a stillness, that hangs in the air, weighing upon the senses.

The bog is land in transition, between a poor-draining depression and solid, dry ground. Although Big Soft Sleep was once logged, that natural progression of land forms given interference, it has revived, and now continues in the metamorphosis, growing, building, receding. At the time when it began to form, the sedges and rushes were among the first to invade the waters

(continued on page 24)



FALCONRY

By FRANK T. HANENKRAT
Appomattox

NOVEMBER. A cold overcast day. I get out of my Scout and take Rosy, my female red-tailed hawk, on my fist. I start walking over the clear-cut area, kicking at brush piles. Twenty minutes go by. The hawk is standing tall, peering with burning eyes at the brush as I beat for game. Finally from about the tenth brush pile a rabbit bolts. Instantly the hawk flashes after it, flying low over the broom-sedge with powerful thrusts. I see her fanned tail-feathers swing down and know that those big yellow feet are reaching forward to seize the prey. But by a lucky swerve the rabbit eludes her grasp. She pitches up into the air, turns, fierce now, and swings forward into another dive after the rabbit.

Taking quarry with trained raptors is a legal form of hunting in Virginia during the falconry season, and is governed by the same laws. The legal name applied to the sport is falconry, though its practitioners usually make a distinction between "falconry" and "hawking." Falconry to them means flying long-winged species after feathered quarry; hawking means flying short-winged species after either feathered or furred game. Since the peregrine falcon is now on the endangered list, hunting with falcons in the eastern U.S. is effectively limited to one species, the merlin, which is considered a limited bird because of its small size and delicate nature. In our area

most practitioners nowadays use short-winged hawks, the favored species being the goshawk, the Cooper's hawk and the red-tailed hawk. No other native raptors are suitable for taking game except the eagle, which is forbidden because of its endangered status, and the sharp-shinned hawk, which like the merlin, is small and delicate, and in addition is extremely difficult to manage. Of the suitable hawks, the

Hooded falcon



red-tailed is by far the easiest to acquire and train. It lacks the speed and aggressiveness of the gos and Coops, but it is nevertheless capable of providing very good sport in pursuit of rabbits, squirrels and other small game.

Falconry is unquestionably an exciting sport even though it will probably not yield one-fiftieth of the game that gun-hunting will. A hawk is a beautiful, exciting creature. Swift, powerful, intelligent, and incredibly fierce in pursuit of its quarry, it is a dangerous and, to its prey, a deadly thing. Yet by proper training it can be brought into a curious cooperative relationship with its trainer. It will willingly return to the fist and perch there contentedly; but it will also fly at game with a burning, single-minded intent to kill, which it is superbly equipped to do. And it will allow the trainer to take it up from its quarry.

The relationship between a falconer and his hawk is deep, complex and probably unstatable. I know of nothing to compare it to. The bond between them exists primarily in the man; the hawk, a descendent of reptilian ancestors and very unlike mammals in many respects, rarely develops a bond of affection for its trainer as does a dog. It remains independent in spirit, and its training and handling demand devotion on the part of the falconer.

Devotion in itself is not enough, however. A considerable amount of know-how and patience are essential. The know-how has been recorded in books, some of which

are listed at the end of this article. But reading about a hawk and actually having one in hand are so vastly different that I would not recommend that anyone undertake the project without the guidance of an experienced falconer. (If new federal regulations now under consideration go into effect, it will be necessary for the aspirant falconer to apprentice himself to a master falconer for two years in order to acquire a permit to legally practice the sport.) I carefully studied five books on the subject, but would not have been able to satisfactorily overcome the obstacles involved in training a hawk the first time if I had not had the assistance of an experienced falconer friend, George Anderson, of Fork Union.

The patience required to train a hawk is also considerable. A hawk in the wild is a confident, decisive killer. A hawk trained for falconry must retain these traits if it is to be any good. The techniques of training, refined through 4000 years, are designed to win the hawk over to the trainer by understanding, firmness, and above all by kindness. The object is to instill in the bird an absolute confidence in its trainer, who thus can never use force or intimidation as training techniques. He can never display anger, frustration, or impatience to the bird, or he may, in a few seconds, destroy the effect of days, perhaps weeks, of effort. Many people, because of their vocations, simply don't have time to do it properly. During training, the bird should be handled at least two hours every day, and that means EVERY day. A hawk, unlike a gun, cannot be hung on a wall when the owner doesn't feel like using it. The trainer must commit himself to a day-in, day-out routine.

Before considering taking up falconry, there are several questions an aspirant should ask himself.

1. Do I know an experienced falconer who will give help and guidance when I need it? A beginner needs assistance in safely live-trapping a bird, in equipping it for training, and in the training process itself.

2. Can I give from one-half to two hours a day to the bird every day throughout the year?

3. If I need to go on a trip or meet some emergency, is there someone knowledgeable close by to whom I can entrust the care of my hawk?

4. Do I have the proper facilities to keep a hawk? It must not be kept in a cage, but in a dry, draft-free room at least 8x8 feet, preferably larger, that contains nothing except special perches.

5. Do I have a reliable source of food? The hawk must be fed lean fresh meat (such as beef-heart or chicken) daily, and twice a week must be given "castings" - fresh meat with the fur or feathers still on it (such as laboratory rats or hatchery

chicks). Castings are vital to a raptor's health.

6. Can I provide the bird with quarry to hunt? All true falconers agree that a hawk kept on a perch as a pet is a cruel travesty of falconry, and that anyone who keeps a raptor should be required by law to hunt it. Hunting is, after all, its natural function. Can you go out and kick up a quarry at will? Try it before you give an answer. And remember that just one rabbit (or whatever) is not enough - when it's gone you will need another, then another, and so on throughout the hunting season. Moreover, the quarry must be in country open enough for the hawk to pursue it in flight.

If you can satisfactorily answer these questions, you will need to equip yourself with the following essential items, described in detail in falconry books, BEFORE YOU ACQUIRE YOUR HAWK:

1. Gloves (about \$6-10; leather welding gloves will do).
2. Hood (\$8 and up, depending on source; you will need to know the species of hawk you will acquire before you can order the hood).
3. Jesses and leashes (about \$10 if you make them from leather you buy yourself, but the leather must be first-rate).
4. Two or more hawk's swivels (about \$5 each).
5. Several pair hawk's bells (about \$5 per pair).
6. A ring-perch (about \$25).
7. Two screen-perches (one for the hawk's room, another for your car so you can transport the bird; about \$15).
8. A weighing machine in the form of a balance-beam scale accurate to $\pm \frac{1}{4}$ oz; about \$80 new).

Red-tailed hawk and prey



Do not get a hawk before you are outfitted with these items; otherwise, by the time you get them, the bird will probably have broken most of its flight feathers and will be psychologically damaged as a result of living in what for it are terrifying conditions. Additionally, you must have a Virginia falconry permit (\$5 - see below). Federal permits may be required in the near future. You will also need a Virginia hunting permit.

Obviously, getting started in falconry is not easy. Once the initial equipment purchases are made, however, and one has learned the fundamentals of handling a hawk safely, the sport begins to yield rewards. There is the satisfaction of having disciplined oneself sufficiently to have trained a wild hawk. There is also the exciting spectacle of the hawk in pursuit of quarry, exhibiting as no other creature can a fascinating combination of beauty and ferocity. But unless you are fortunate enough to live in an area of unusually abundant game, falconry demands continuous hard work. On the hunt described in the opening of this article, the rabbit managed to escape from Rosy by running through a thicket she could not penetrate. A second rabbit also got away. Only after two hours of beating brush piles and finally jumping a third rabbit did I manage to give Rosy a kill. But if like most falconers, you are so fascinated by hawks that almost no amount of work is too much to pay for the excitement of seeing one in action, then falconry may well be the right sport for you.

SOURCES OF SUPPLIES

This list is not complete; these are only some of the most convenient sources:

1. VIRGINIA FALCONRY PERMIT: Application forms from Commission of Game and Inland Fisheries, 4010 W. Broad St., Richmond 23230.

2. HOODS, SWIVELS: Ron Frye, 113 E. Piedmont St., Culpeper, VA 22701.

3. GLOVES, PERCHES, OTHER ITEMS: Phyllis Kalem, 2557 N. DuBonnet Ave., Rosemead, California 91770.

4. BELLS: Pete Asborno, 4530 W. 31st Ave., Denver, Colorado 80212.

5. LEATHER AND LEATHER TOOLS: Richmond Leather Co., PO Box 5098, Richmond 23220; also Tandy Leather Stores in Roanoke, Washington, D.C. and other nearby cities.

6. BALANCE SCALES: Edmund Scientific Co., 635 Edscorp Bldg., Barrington, New Jersey 08007.

7. FALCONRY BOOKS: Falcon Head Press, PO Box 913, Golden, Colorado 80401; also William R. Hecht, Box 67, Scottsdale, Arizona 85252.

The best books on falconry are two by J. G. Mavrogordato: *A HAWK FOR THE BUSH*; and *A FALCON IN THE FIELD*.



Don't Bug Me!

By ROBERT D. HALL
VPI & SU, Blacksburg

Sooner or later everyone will encounter the multitudes of insects and their allies which share the thousands of Virginia acres used annually for outdoor recreation. It is well known that many campers, hikers, hunters and fishermen have had trips spoiled through lack of proper precautions against insect attack. This is unfortunate, because most types of insect-caused discomfort can be prevented with minimum difficulty.

Proper clothing will deter attack by the majority of pestiferous insects. Long-sleeved shirts and trouser legs cover a lot of body area which otherwise would be exposed. Some fishermen and spring turkey hunters swear by headnets. These are simply nylon netting fitted about the crown of a favorite hat and tucked firmly into the neck of a shirt.

There are of course, occasions where clothing by itself will not prevent insect bites. During extremely hot weather, most people will not want to suffer inside long sleeves and buttoned-up collars. In addition, pests such as chiggers function best when tight clothing chafes the skin. These tiny mites crawl by the hordes onto clothing and settle down to feed wherever it is tight against the wearer. It is for these reasons that chemical insect repellents have become such a boon to mankind. Older formulas such as oil of citronella and camphor still have uses, but modern repellents are far more effective.

The two compounds sold most widely today for insect repellent purposes are ethyl hexanediol and N, N-diethyl-meta-toluamide. The latter formula, called DEET for short, is generally considered the most effective repellent commercially available. It works against a wide spectrum of pests and is safe when applied to human skin and will not injure cotton clothing. It remains effective for at least a full day when applied at 100 percent concentration.

DEET does have certain drawbacks, but these can be surmounted with a bit of care. The chemical feels oily at high concentrations, but this is no worse than many popular suntan creams. Worse is the tendency of DEET

to soften or dissolve some synthetic fibers and plastics. Plastic fishing reels, some gunstock finishes and other plastic equipment may be affected, as may nylon and other man-made fabrics. With caution, however, trouble such as this should be minimal.

When shopping for insect repellents, select the one with the highest percentage of DEET listed on the label. This should be above 25 percent at the lowest. Effectiveness goes up markedly as the concentration of DEET approaches 100 percent. The most economical way to purchase this material is tin squirt-top bottles or liquid, for waste in this form is greatly reduced. Do not be afraid to pay a bit more if the more expensive product has a good bit more DEET in it.

For maximum effectiveness, all exposed skin should receive insect repellent treatment. Avoid getting the material on sensitive membranes such as the nose and lips and be especially careful not to get the repellent into the eyes.

It is possible to treat a shirt to prevent attack by mosquitoes, sandflies, horse and deer flies. The shirt is constructed from cotton-rayon mosquito netting with a fine mesh. It is made with long sleeves and a hood much like a hooded sweatshirt. The material is treated by soaking it in 200 ml of DEET at 30 percent concentration in alcohol. After drying, these garments may be worn over other clothing, or alone if the weather is extremely hot. Effectiveness is retained for three months unless a heavy rain intervenes. Storage between wearings should be in a tightly fitted metal can, such as a tobacco tin. Retreating the shirt each spring should be sufficient for most outdoor activities in Virginia.

A shiny silver hardhat with a film of fuel oil wiped over the outside surface reduces almost to zero the number of gnats attacking the wearer. While this protection does not prevent mosquito bites, this method might be useful if gnats are a problem.

With a knowledgeable approach to seasonal insect cycles, proper and judicious use of effective chemical repellents and personal awareness, insect bites can be prevented or reduced to tolerable levels and the quality of outdoor recreation improved. There is really no excuse for any more trips ruined by "those darn bugs."

CONSERVATIONGRAM

Commission Activities and Late Wildlife News... At A Glance

Surry and County, Camp of work U. S. Bureau of Fisheries and Wildlife and the Virginia Commission of Game and Inland Fisheries to accomplish strain of December 5, 1957, and four cocks of Iranian strain on December 5, 1957, From these 111, Iranians were sent to Ohio and Missouri and 16 eastern Iranians were sent to farm in United States. Japanese are 18 hen were flown to Commission

SUMMARY OF 1976-77 GAME AND FISH LAWS

DEER season west of the Blue Ridge will be November 15-29, one deer per year, bucks only in the southwest and one doe the last day in the northwest counties. East of the Blue Ridge excepting a few southeastern areas, the season will be November 15-January 5. Bag Limit will be two per year, with one doe on prescribed days (check individual counties).

BEAR season will be November 22-December 31 in northwestern counties and November 1-January 5 in southwestern counties open to bear hunting.

TURKEY season will be November 8-December 31 statewide except where closed to fall turkey hunting. West of the Blue Ridge Bag Limit is two per year, one of which may be a hen in the fall. East of the Blue Ridge, two per year, gobblers only. Yearly bag limit means only two turkeys may be taken in the spring and fall seasons combined. Two additional counties will be closed to fall turkey hunting - Chesterfield and Greensville.

SQUIRREL. Fox squirrel hunting will be open in all counties west of the Blue Ridge, plus Loudoun and Fairfax during regular squirrel seasons, which remain basically the same as last year, excepting Spotsylvania which will no longer have the early squirrel season.

SMALL GAME (raccoon, opossum) will remain basically the same as last year. East of the Blue Ridge, September 1-March 31. West of the Blue Ridge the season will open October 15 and close in the southwestern counties on January 31; in the northwestern counties on February 28. Bag Limit on raccoon west of the Blue Ridge will remain in effect: 25 per season (hunting and trapping combined); 2 per hunting party taken between noon one day and noon the next day, except Scott County (one per day, three per year).

MISCELLANEOUS. QUAIL and GROUSE, November 8-February 15; RABBIT, November 8-January 31; PHEASANT, November 8-13; CROW, Wed, Thur, Fri, and Saturdays, August 1-February 28.

BOW AND ARROW season for deer, bear and squirrel is October 11-November 5. In addition a special bow and arrow season for deer west of the Blue Ridge will extend from the closing date of gun season on November 29 until January 5.

PRIMITIVE WEAPONS are restricted to single shot flint lock or side lock percussion weapons. Special primitive weapons season for deer is November 1-6 on the Jefferson National Forest north of New River, and on G. Richard Thompson, Gathright, Clinch Mountain and Goshen-Little North Mountain Wildlife Management Areas.

TROUT FISHING. Two new rivers with size limits on trout. St. Mary's River in Augusta Co., upstream from George Washington National Forest property line gate, 10-inch size limit, artificial lures and single barbless hooks only; and Smith River in Henry Co., from signs below east bank of Towne Creek for approximately 3 miles downstream, Creel Limit, one trout per day, size limit, 12-inches, and artificial lures with single barbless hooks only.

THIS IS ONLY A GENERAL SUMMARY. CHECK SPECIFIC LOCATIONS, STATE LANDS AND MILITARY AREAS FOR FURTHER REGULATIONS. THE SUMMARY OF VIRGINIA GAME AND FISH LAWS, PUBLISHED ANNUALLY BY THE COMMISSION OF GAME AND INLAND FISHERIES WILL BE AVAILABLE AUGUST 1.



Virginia's Mountain Cottontail

By MICHAEL J. BLYMYER
Blacksburg

It hadn't taken long for the accumulated water on the mountain laurel leaves to find its way through the numerous cuts and punctures of my wet-weather gear, and now I was a bit uncomfortable. As I broke through the tangled brush and briars of the clearcut I noticed my Viszla pup on point at my next box-trap. Today I envied the animal I knew would be waiting in the trap. He, undoubtedly, was dry and warm, while I on the other hand, was very wet and numb from the February rain after several hours of wading through the thorns and brush of the clearcuts I was studying.

Looking through the wire facing at the rear of the trap I could see the long ears of a cottontail. I opened the trap door and carefully grasped the rabbit in front of its rear legs, and pulled it out for further inspection.

His rounded dark-rimmed ears were amply furred on the inside. He looked smaller than the average Eastern cottontail, and instead of the white spot which is found on the forehead of 50 percent of all Eastern cottontails, he sported an ill-defined patch of black fur between and slightly forward of his ears. Actually, this wasn't your common cottontail, but rather, a New England cottontail.

The scientific name for the New England cottontail is *Sylvilagus transitionalis*. However, it is more popularly known as the wood rabbit or mountain cottontail. Although externally it looks similar to its relative the Eastern cottonail (*Sylvilagus floridanus*) the skulls of the two species are distinctly different.

In Virginia the New England cottontail was thought to occur only at elevations greater than 2500 feet in the

higher mountains of the western part of the state. However, 20 out of the 22 cottontails I captured between 1881 to 1980 feet were identified as New England cottontails. The area in which these captures took place was a 6- to 7-year-old clearcut in Montgomery County. It was estimated that this clearcut supported a winter population of greater than one rabbit per acre.

Originally, the mountain cottontail ranged from southeastern Maine and northern Vermont, south through the Appalachians to northeastern Alabama. Its present range though, has been aptly described as resembling small islands in a sea of Eastern cottontails. This displacement from its former habitat by the more aggressive Eastern cottontail has been so severe that some authorities consider this species to be rare and endangered.

From the few studies that have been conducted on the New England cottontail its habits appear to be similar to those of the Eastern cottontail. However, the fact that it shows a preference to wooded rather than open areas suggests that there may be more difference between the habits of the two species than is suspected.

The next time you bag a rabbit back in the mountains take a close look at it. Are the ears rounded at the top, well furred on the inside, and does the fur create a distinct black border along the front edge of the ears? Is the white "star" missing on the forehead? Does your rabbit have an ill-defined black patch between and immediately forward of the ears? If you can answer "yes" to all these questions, then chances are fairly good that you will be dining on Virginia's mountain cottontail.

TURTLES OF VIRGINIA



By JOSEPH C. MITCHELL

Turtles are the most familiar of the reptiles and by far the most tolerated. Virginia has 18 species of native freshwater and terrestrial turtles and 5 species of far-ranging sea turtles that occasionally visit our coastal areas. The most distinguishing feature is the shell which

acts like a coat of armor. This has changed little in the 200 million years it has been around. It is composed of two parts: the carapace, or upper portion, and the plastron, or lower portion. They are joined together on each side by a bridge, and are covered with epidermal scale-like plates called scutes. Inside, the vertebrae and ribs are fused to the carapace. (continued on page 20)

TURTLES



SNAPPING TURTLE



EASTERN PAINTED TURTLE



RIVER COOTER



FLORIDA COOTER



RED BELLIED TURTLE



YELLOW BELLIED SLIDER



CUMBERLAND TURTLE



VIRGINIA



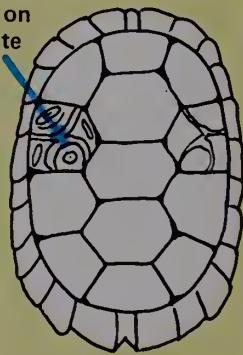
Most Virginia species are found in or near water, usually ponds, rivers or swampy areas with aquatic vegetation. The major exception is the box turtle. Many turtles eat what they can get but a few are specialized feeders. Food is usually eaten in the water in the case of aquatic forms. All turtles build nests in which to lay their eggs, usually in the spring with the female excavating a hole in suitable earth, laying the eggs and covering it up to hide it. There is no parental care, the young are on their own from the beginning. Predators; raccoons, skunks, opossums, pigs and wading birds, take a heavy toll on the eggs and young. Man is by far the worst predator. His unconcern for living populations has brought the red-eared turtle, for example, to a point where biologists are becoming alarmed about its existence. Over-collecting for food, drainage of wetlands and pesticides have all reduced their numbers.

bands across the carapace. Nesting occurs from mid-May through July and 2-11 eggs hatch in August-September. Size: young, 1-inch; adults, 4-9 inches. They are omnivorous, feeding on both plant and animal matter.

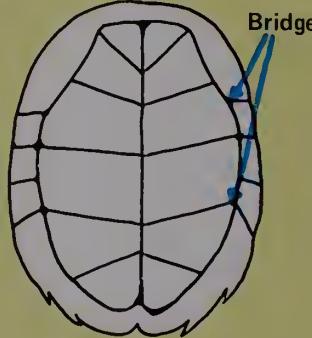
River Cooter, *Chrysemys concinna*. A large turtle seen in lakes and rivers in the coastal plain and piedmont. The identifying characteristic is the C-shaped mark on the second pleural scute. The plastron is plain yellow with a dark pattern along the seams that fades with age. Females lay the eggs in May-July and the young hatch in August-October. Size: young, 1½ inches; adults, 8-17 inches. Food is primarily aquatic vegetation but snails, crayfish and dead fish are sometimes eaten.

Florida Cooter, *Chrysemys floridana*. Found in permanent bodies of water, lakes and ponds, in the coastal plain. Adults are brownish with yellow markings on the

C-shaped mark on 2nd pleural scute

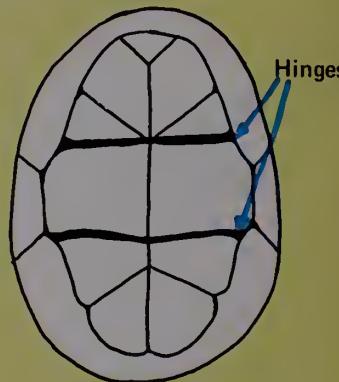


Carapace



Plastron

Hinges



Mud Turtle Plastron

Figure 1

Figure 2

Snapping Turtle, *Chelydra serpentina*. One of the largest and ugliest turtles, it is found throughout Virginia. Identified by the large powerful head, small plastron and long saw-tooth tail. Habitat includes freshwater ponds, small streams and mud holes but may be found on land while moving from one body of water to another. They are scavengers, eating such things as dead fish, mammals, crayfish and vegetation. Snappers do not bask like most other turtles, but prefer to remain in the water. The 20-30 eggs are deposited in May to June and hatch in August to October. Size: young, 1½-inches; adults, 8-18 inches (10-60 pounds). Snapping turtles can bite hard and inflict a nasty wound, so keep your anatomy away from the mouth.

Painted Turtle, *Chrysemys picta*. A common turtle, found basking on logs and snags in slow moving bodies of water, such as woodland ponds and lakes. The margins of the shell are red and black, the head has two yellow spots on both sides and there are olive-colored

carapace and on the head and neck. There are no markings on the plastron. Nesting occurs in late spring and the 12-20 eggs hatch in late summer. Size: young, 1 inch; adults, 9-13 inches. Food consists mainly of aquatic vegetation.

Red-bellied Turtle, *Chrysemys rubriventris*. A large turtle of the coastal plain in permanent bodies of water from woodland ponds to rivers. Look for vertical red lines on the pleural scutes of the carapace and a reddish plastron with dark smudges. Nesting takes place in July and the 10-18 young emerge in late summer. Size: young, 1¼ inches; adults, 10-16 inches. This turtle is omnivorous, feeding on crayfish, tadpoles and especially aquatic vegetation, seldom fish.

Yellow-bellied Turtle, *Chrysemys scripta scripta*. A medium size (6-11 inch) turtle found in the southeast Virginia corner. Inhabits quiet waters with lots of vegetation. Identifying marks are the yellow patches behind

the eyes and the yellow stripes on the pleural scutes. There are no markings on the plastron. Will eat most anything available. Females lay 5-18 eggs in May-June and the 1-inch young hatch in August-September.

Cumberland Turtle, *Chrysemys scripta troostii*. Essentially like the yellow-bellied turtle except head stripe is narrower, has paired hollowed blotches on the plastron and is found only in the extreme southwest corner of the state.

Spotted Turtle, *Clemmys guttata*. A small blue-black turtle with yellow spots on the shell and head. Found in the coastal plain and piedmont. Size: young, 1 inch; adults, 5 inches. Habitat includes marshy areas, bogs, and woodland ponds with aquatic vegetation. Feeds on worms, crayfish, insects and vegetation. The 3-5 eggs are laid in late spring and the young emerge in late summer. They may overwinter in the nest.

Wood Turtle, *Clemmys insculpta*. A rough-shelled turtle found only in extreme northern Virginia. The carapace is brown with each scute raised to form a concentric pyramid. The neck and forelimbs have blotches of red-orange pigment. It is found in deciduous woods and woodland bogs. Food consists of plants, berries, earthworms, snails and tadpoles. The 4-12 eggs are laid in May-June and hatch in September or October. Size: young, 1 1/4 inches; adults, 6-9 inches.

Bog Turtle, *Clemmys muhlenbergii*. This turtle is an endangered species, due primarily to the continued destruction of its habitat. It is found only in sphagnum bogs and marsh meadows. Small populations are known only from the southwestern piedmont in Virginia. The identifying mark is the yellow-orange patch on either side of the head. They eat insects, berries, snails and some plants. The 3-5 eggs are deposited in June or July and hatch about September. Size: young, 1 inch; adults, 4 inches.

Mud Turtle, *Kinosternon subrubrum*. An olive-brown turtle with a large head, found in the coastal plain and piedmont. The head has some yellow mottling and the plastron has two hinges. Habitat is usually shallow water ditches, ponds and swamps. This species feeds on anything available. The 2-5 eggs are laid in late spring, hatching about September. Size: young, 7/8 inch; adults, 3-5 inches.

Chicken Turtle, *Deirochelys reticularia*. One of Virginia's most colorful turtles having a yellowish net-like pattern on an olive carapace. The head and legs are olive with yellow stripes and the plastron is plain yellow, with yellow and olive vertical stripes on the rump. Found only in the southeastern corner of Virginia, they prefer still waters such as ponds and ditches. Food includes tadpoles, crayfish, carrion and some plants. Females lay 5-15 eggs in April or May which hatch about August. Size: young, 1 inch; adults, 4-10 inches.

Diamondback Terrapin, *Malaclemys terrapin*. This is the salt marsh turtle found along the entire Virginia coast and along tributaries that contain some brackish

water. Habitat includes tidal flats, estuaries and lagoons behind beaches. The scutes on the carapace have concentric rings or ridges and the head and legs are spotted with black. Adults have a dark "mustache." They feed on snails, crabs, worms and plants. Nesting occurs in April to June and 4-12 eggs hatch in June-September. Females may lay more than one clutch per year. Size: young, 1 inch; adults, 9 inches.

Map Turtle, *Graptemys geographica*. A medium size turtle (4-10 inches) having a low keel down the middle of the back and a serrated hind margin of the shell. A yellow patch is located behind the eye and the plastron is plain yellow. In Virginia they are found in large bodies of water (rivers and lakes) in the southwestern corner. Food consists mainly of freshwater snails and clams but dead fish are occasionally eaten. Females nest in May to mid-July and the 10-16 eggs hatch in August-September. Young are 1 1/4 inches.

Stripe-necked Musk Turtle, *Sternotherus minor peltifer*. Has been found only in Lee County. The identifying marks are the stripes on the neck and the overlapping scutes on the middle of the carapace. The plastron is small and has one hinge, otherwise it looks a lot like the mud turtle. It prefers soft bottom creeks and rivers where it searches for insects, snails, clams and some vegetation. The reproductive habits are not known. Size: young, 1 inch; adults, 3-4 1/2 inches.

Stinkpot, *Sternotherus odoratus*. A small olive-brown to black turtle found statewide. It occurs in waters where the current is slow and the bottom soft; streams, ponds and swamps. The head has two light lines on each side and the plastron has one hinge. Feeds on most anything; insects, snails, carrion and plants. Egg laying lasts from March-July and the 1-9 eggs hatch in September or October. Size: young, 3/4 inch; adults, 3 1/2-5 1/2 inches.

Box Turtle, *Terrapene carolina*. The common terrestrial turtle found statewide in open woodlands. Forages during the day seeking shelter under rotting logs, leaves or mud holes when the weather becomes too hot for them. It is the only turtle in our area that can almost completely withdraw into its shell. Coloration is extremely variable, usually brownish with yellowish markings. The plastron has a single broad hinge. They eat most anything but are especially fond of fruits. Size: young, 1 1/4 inches; adults, 4-8 inches. The 3-8 eggs are laid in May-July and hatch in September-October.

Spiny Softshell Turtle, *Trionyx spiniferus*. Has been found only in southwest Virginia. Habitat includes rivers and lakes with aquatic vegetation. These round turtles lack the scutes and are covered with a leathery skin. The snout is long, the head has two dark-bordered light stripes on each side and the carapace is olive or tan with a pattern of dark blotches. Feed on crayfish, insects, small fish and tadpoles. Females lay 9-32 eggs in June or July which hatch in August-October. Size: young, 1 1/2 inches; adults, 5-18 inches.

The Farming Game

By JOHN H. REEVES, JR.

Department of Biology

Virginia Military Institute, Lexington

Every hunter in the Commonwealth is aware that annually there is a decrease in available hunting lands. This situation is aggravated by a group of related conditions. As population pressures continue to increase in larger urban centers, more and more people buy small farms and move into rural areas. In many instances the change in land ownership brings about closing of land to local hunters. In addition, there has been a 50 percent increase in the sale of hunting licenses in Virginia during the past decade. The combination of additional amounts of posted lands with an increase in numbers of licensed hunters has reduced the available acreage per hunter. With such pressures as these affecting wildlife management it becomes mandatory to explore techniques that increase populations of wildlife species on managed lands while maintaining the physical health and well-being of the animals. Since a number of individuals have access to small or medium-sized farms near centers of urban population such lands appear to be prime targets for experimentation.

Realizing that wildlife biologists are continually developing techniques for improvement of game animal populations and hunting conditions, members of the Department of Biology of the Virginia Military Institute contacted Joe L. Coggin, Virginia Game Commission Supervising Research Biologist for areas west of the Blue Ridge, to determine if a course of study could be initiated to explore management techniques on small farms. These conversations indicated that such a plan should prove fruitful for students, and the course was taught for the first time in the fall of 1974. Dr. L. Thomas Kenney, a Lexington physician was kind enough to provide a 149-acre farm for the study.

Mr. Coggin was instrumental in establishing plans for the course, and in deciding what techniques were to be employed on the land. From the beginning it was desired that students would get first-hand knowledge of proper use of management techniques to improve land and game animal populations on it. Additionally, research would provide information on the effectiveness of these techniques.

The Road Bed Food Patch. Twelve years ago Mr. Coggin and Harold Trumbo, Supervising Wildlife Biolo-

gist, began experimenting with development of wildlife food patches along old roads through forested areas. Such areas are easy to plant and measure since a strip of land 8½ feet wide and 1 mile long contains 1 acre of land. Such a road existed on the Kenney farm. It ran completely across the back side of the area, and lay mostly on the crest of a ridge. For approximately half its length it passed through a mixed forest of conifers and hardwoods, while the remaining half passed through a mature hardwood forest. In total length the road measured about ¾ mile. Early studies showed that a number of deer were already utilizing the area, and one section in the mixed forest was dangerously close to being over-browsed. This area was treated first. The road bed, although mostly overgrown, measured 8 feet wide; plans called for an additional 8 feet of land on each side of the road to be completely cleared of vegetation, resulting in a strip of cleared land measuring 24 feet wide. One advantage in this type of land treatment is that trees which are removed in clearing can be sold as saw timber, pulp wood, or fence posts. In some instances the revenue collected from the sale of such material can support the cost of the food patch. The road bed, since it gets the greatest amount of sunlight, is prepared and planted with a mixture of seed to provide food for deer, turkey, grouse and quail. The game bird seed mixture provided by the Game Commission is excellent for spring, summer and early fall food and cover for the game species, but additional plantings of winter wheat and corn will provide food for deer and turkey, and will remain into the winter months. The edges of the road bed food patch should be lined with the brush, tree limbs and tops of conifers resulting from the clearing of the strips, to provide cover and avenues of approach to the food supply. The newly cleared strips along the road quickly sprout with hardwood shoots which are excellent deer browse. During the first winter after the completion of the food patch, deer fed heavily on shoots of red bud and to a lesser extent on dogwood. All other species of hardwoods that returned were also utilized. At one spot a growth of greenbrier was left and fertilized; it grew abundantly during the summer and virtually every new sprout was browsed by deer.

There are advantages to preparing food patches in

such a fashion. There is the spreading out of the food supply with the consequent spreading out of animals. It has been known for some time that as animals are collected in small restricted areas with a number of individuals feeding over the same land the danger of disease and parasite transmission is greatly enhanced. Prior to road bed food planting, turkeys had not used the area to any real extent in their feeding, but one year after the opening had been created the effects of their search for food was noticeable along the old roads.

Use of Special Food Plants with Regard to Season. A major problem for the wildlife biologist is the production of food for specific wildlife species. This is especially true for those months of late winter and early spring when much of the food supply has been depleted and animals have difficulty in finding enough to eat. This is a critical time, for the animals must come through the winter in good condition to be prepared for the mating and birthing season. In regard to late winter food for turkeys, a discovery was made. During the early spring of 1976 there was an unusually warm period when some of the plants became active. During this time we observed that a flock of turkeys had fed along the crest of a ridge, but the scratching was confined primarily to areas under spice bush plants. A search under these plants uncovered a seed measuring approximately $\frac{1}{4}$ -inch in length and $\frac{1}{8}$ -inch wide; it was thought that this was the reason for the turkeys' scratching, and later in the V.M.I. Herbarium the seed was determined to be that of the spice bush.

In conversation with George Tolley, a local naturalist, I learned that this same condition had been found on the slopes of Hog Back Mountain in Rockbridge County during the early spring of 1975 and 1976. While it cannot be definitely stated that turkeys were searching for this particular seed, it seems likely that they were. Further investigation will be made to determine if this is a food annually sought or if these were isolated cases. If the spice bush seed is found to be a preferred food of the wild turkey it will be a most important discovery, for the spice bush will grow in the shade of mature hardwood trees that compose good turkey range, and introduction of this plant should improve turkey range. The seed of the spice bush has been previously reported to be excellent food for grouse, but to this time, it has not been used in turkey management.

Preference of Animals for Particular Cover. In an effort to locate concentrations of game animals at a time when they were not feeding, transect lines were laid out through all types of plant cover. These lines were so designed that half of them lay within treated areas and half lay within control areas. The lines were walked at specified times and the numbers and kinds of animal species were recorded. In an effort to obtain the maximum number of sightings, one man walked along the transect line while to his right and left a man walked

a parallel line 25 yards and 50 yards from the transect line. To date, the major information that has resulted from this activity is the fact that deer, turkey and grouse all seem to prefer to spend daylight hours in forests composed of a mixture of conifers and hardwood trees. The particular area under study contains a blend of 43 percent conifers and 57 percent hardwood species. Thirty-six percent of the trees are mast producers, and this may account for the heavy turkey utilization. The area shows evidence of having once been cleared, and then abandoned to return to forest growth. This most likely occurred about 75 years ago.

Pheasant Release in the Area. The one discouraging part of the study concerns the absence of pheasants on the managed areas. During the early 1970's 200 pheasants were released in an adjoining area. Release points were located one-tenth mile apart and 10 birds were released at each point from a road that lies adjacent to much of the managed area. The birds scattered widely over the surrounding country, but a number of them have chosen to remain on farms near the release points. Interestingly, not a single banded, or original bird has been harvested. All birds taken during the hunting seasons have apparently been reared in the area. During the summer of 1975, at least three broods were seen by members of the James A. Tilson family. The mating call of the cocks has been heard daily this spring from the fence rows of the Tilson and the Reeves farms in the release area. Encouraging news comes in from people who have made sightings some distances from the release points. It appears some of the birds have adjusted to the area and are raising broods annually. Unfortunately, none have chosen to live on the Kenney farm, and perhaps this is due to the fact that no domestic livestock are fed in the pastures. It has been noticed that pheasants feed on corn grains that are left over after horses and cattle have been fed in the fields.

Summary. The techniques that are employed on the Kenney farm are of the type that can be utilized on almost any such area of land. Evidence clearly indicates that the use of the road bed food patch can greatly enhance the utilization of a forested area by desired wildlife species, and can usually be accomplished with a minimum of work and with some monetary return from the sale of timber products. Efforts will be made in the future to increase the number of spice bush plants in forested areas to determine if their occurrence increases turkey utilization of the area in late winter and early spring months.

It is the consensus of opinion among the investigators that wildlife populations could be increased on small farms if these techniques are carried out. Since much of the efforts of Game Commission biologists are restricted to public owned lands, the individual land-owners and their use of the land become important factors in the production and preservation of Virginia's wildlife populations.

collected in the depression. Cottongrass, perhaps the most distinctive of the grasses, took its natural place among the others, and has held it since that time, salting the greens and golds of autumn with its cottony tuft.

When the first plants died, leaving a layer of organic material on the waters, the sphagnum moss began. Buoyed up by contained cells of air, it provided a carpet for other vegetation. Mosses are the foundation of Big Soft Sleep. They run many thicknesses into the earth, holding and drinking of the moisture there. Where the waters push close to the surface, they are the green of jadestone. In drier areas, and in varied stages of decay, they flare gold to rust, to a dark, brawny red.

As the years have passed, and layer upon layer of moss and grass has been pressed beneath the new growth, the carpet has thickened. The trees and shrubby heaths have set seed there, and grown. Rhododendron, that grows around the bog, climbing the hills on each side, creating an almost impenetrable tangle, has gone inside, joining mountain laurel and sheep laurel. The red spruces and pitch pines are stunted and distorted by the acid-tainted waters that the roots absorb, often not reaching the height of a man before dying.

The progression of life continues, the dying building for the ones after, each advancing a step beyond that which was before, each moving the bog onward, and inward, the succession of plant life moving in circles about the wetter areas, forming ever-tightening rings about the bog's edge. And when the waters have been absorbed, and the earth has become strong and fertile, the bog will come to its end, as was meant to be.

Years ago, the snowshoe hare inhabited the higher regions of Virginia, making their homes in rhododendron and laurel thickets like the ones about Big Soft Sleep. When the mountains were logged, the coniferous forests destroyed, the hare disappeared. During the last six years, the Virginia Commission of Game and Inland Fisheries has made an attempt to re-introduce them to Virginia, to give them another chance at survival. Several releases have been made in and near the Mountain Lake Wilderness Study Area. Last winter tracks of those oversized hind feet, which gave the hares their name, were found in the area, giving evidence of their continuance, sparking the hope that they will establish themselves and produce young, and again occupy their natural place in Virginia's forests.

There is the natural about the Mountain Lake area; the trout that run the streams, the ferns that clothe the cliffs, the restfulness, the subtle changing of the seasons, of nature's systems. The evening hazes settle across the drifting Appalachians, and then the night, and from Wind Rock there are a thousand lights glittering. The earth revolves in silence, and the star lights cross the cliffs, and from the blackness, maybe beyond, someone whispers an answer.

Smith Mountain Muskies

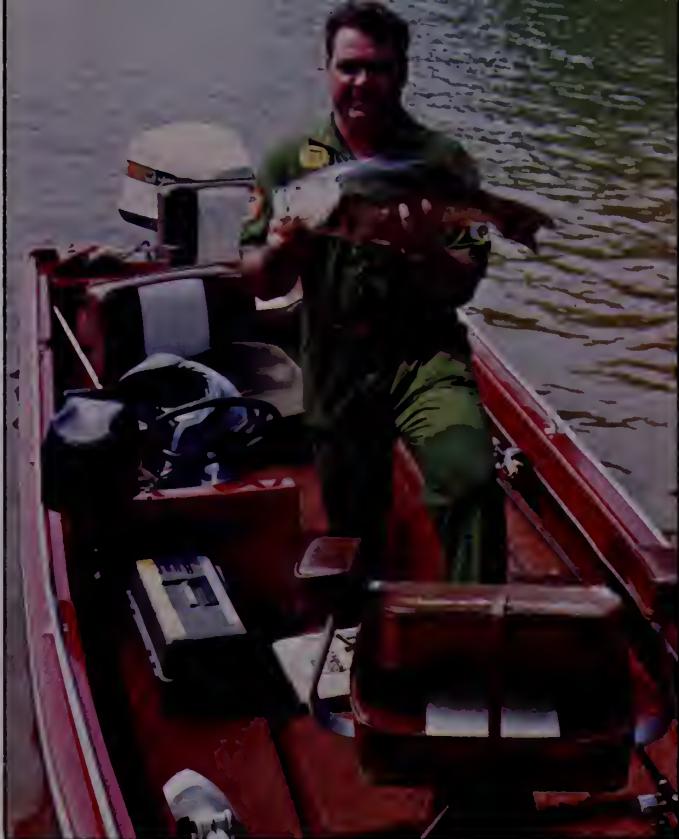
By LARRY W. COMPTON
Martinsville

In years past, when anyone caught a 4-foot-long muskellunge, it usually happened while they were on a fishing trip to the Great Lake states of Wisconsin, Illinois or Michigan or in Canada. Because of the stocking program of the Commission of Game and Inland Fisheries; we fishermen have some very fine muskie fishing right here at home. Muskies have been stocked in several lakes; Claytor, Burke, Leesville, Smith Mountain and the James River. Last year, Smith Mountain was the most productive; it yielded 57 of the 72 muskies over 8 pounds that qualified for Virginia's citation program. In fact, Smith Mountain produced the top 19 muskies in the state of Virginia; including the 34-lb, 11-oz state record caught by Richard Boone of Roanoke on February 28, 1976. That record muskie was caught on a Magnum Hellbender trolled about 20-feet deep in the Hale's Ford Bridge area of the Roanoke River arm of the 20,000 acre lake. That's a big muskie, even by most northern standards.

Over 29,000 muskies have been stocked since 1963-64, most of them 4 to 5 inches in length. I don't know how many survived but there are some whoppers being caught from the ones that made it.

On the 8th of August last year, I met an unusual muskie fisherman. My wife Julie and I had driven our pickup camper from our home in Martinsville to Pelican Point Campground on Smith Mountain Lake. I'm a bass fisherman and we were going to fish a little and just enjoy getting away for a day or so. As I stopped at the office, I saw a guy holding up the biggest muskie I'd ever seen. I asked his name and how much the whopper

Right: The author, who wrote the structure fishing section in Alexandria Drafting's *Fishing Atlas Bass Structure Fishing Smith Mountain Lake* has found the muskies as challenging as the bass. Below: Lawrence Hewitt, "an unusual muskie fisherman."



weighed. He said, "I'm Lawrence Hewitt and it weighed 26-lb, 8-oz. and is 47 inches long." I congratulated him on a fine catch and went inside to register. While I was in the office, someone told me that Hewitt had caught four other big muskies in less than a month. I couldn't believe it! Most people fish a lifetime and never even catch one. I rushed outside and waited for the crowd of admirers to thin out. I told Mr. Hewitt my name and explained that I'd like to interview him. He agreed and told me at which campsite he was located. After we put our Ranger bass boat in the water and found a comfortable site for the pickup camper, I went over to talk to him.

Hewitt introduced his wife Lucy, and told me she is a schoolteacher. He's a retired scientific and technical photographer, who used to work for the government at the Yorktown Naval Weapons Station. Their home is in Chesapeake, where he is a Captain in the Auxiliary Police Department. They said they'd been coming to Smith Mountain to camp at Pelican Point for six or seven years.

Hewitt told me he caught his first muskie, a 26½-pounder, 44-inches long on July 12, 1975, in about 15 feet of water. He was using a spinning reel with 12-pound test line - trolling a Hellbender, fishing for bass. He said the big fish was really a thrill for him, and he felt extremely lucky to have landed it on such light line. He immediately bought some 20-pound test line and put it on his reels; also found some wire leaders and some Magnum Hellbenders because the hooks on a regular lure will straighten out with one of those Smith Mountain "Jaws" pulling on them. He got out his Bass Structure Fishing Atlas (published by Alexandria Draf-

ting Company) and began searching for mid-lake structures that might hold other muskies. These topographical maps are very useful because they reveal the location of underwater islands, old road beds, old home foundations, creek and river channels, rock piles, standing timber, brush piles, cemetaries and other structures that attract and hold fish.

Hewitt found several places on the topo map that looked promising; he started checking out all of these spots with his Super Sixty Hummingbird Depth Finder. After getting a mental picture of the bottom of the lake in those areas and taking bearings on shoreline objects, he was able to return to his spots time after time. All four of his muskies had been caught late in the evening; and during either a major or minor period of the Solar tables. Since he had caught so many muskies, other fishermen had started following him on his evening fishing trips. He switched to the morning hours and caught the 26½-pounder the morning of the interview at 9:30 a.m. All of his muskies had been caught on Hellbenders; Coachdog White produced best, but he had caught one each on the Pin Stripe and Frog colors.

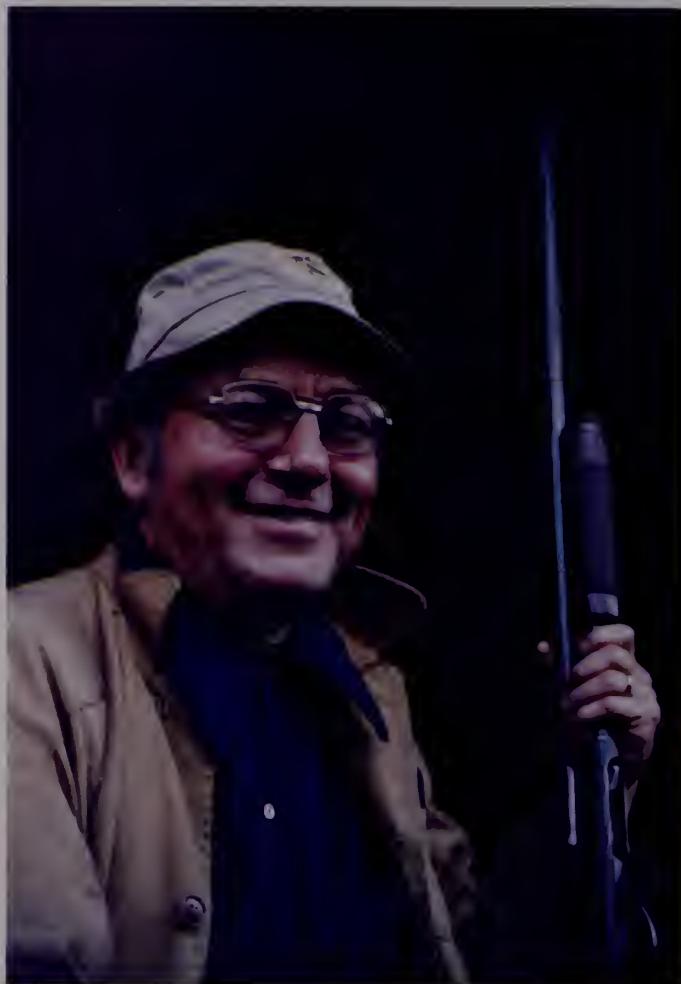
Hewitt lets out about 50 to 70 yards of line and trolls four or five miles per hour. This puts the Magnum Hellbender down to about 15-18 feet deep. He tries to troll over water about 20-feet deep most of the time. One important thing to remember; don't try to "horse" in a big muskie; play the fish about a minute for each pound it weighs. A large net and a gaff come in very handy if you do get a long-jawed muskie to the boat.

That afternoon, Julie and I went fishing for bass; after catching a few small ones we started back to the

(continued on page 30)

Personalities

by F. N. Satterlee



James R. Knight
Commissioner, First Congressional District

A Mississippian by birth, Jim Knight's early childhood was punctuated by frequent moves in connection with his father's construction business. While the family lived in Birmingham, Alabama, Jim joined the Boy Scouts, one summer was privileged to attend the Boy Scout advanced camping facility at Philmont, New Mexico and later became an Eagle Scout. During these maturing years, Jim was caught up in his father's avid interest in the outdoors and especially in fishing...for smallmouth bass. Eventually the family returned to Pontotoc, Mississippi, where he graduated from High School.

Dr. Knight recalls how, as a youth, he camped out almost every weekend and he is certain that the scouting experience and his exposure to nature and hunting and fishing with his father, plus the lessons he learned on his own, had much to do with the progression of his later life.

Following graduation from High School, Jim attended the University of Mississippi where he was enrolled in pre-dentistry. This pursuit was something that he had dreamed of since early childhood. From "Ole Miss" he went to the University of Tennessee in Memphis where he was graduated from the School of Dentistry.

At this point in his career, he accepted employment with the Public Health Service in Lovingston, Va. This was followed by assignments with the U.S. Health Service, first to the Vocational Indian School in Flandreau, South Dakota, where he was introduced to pheasant hunting (an experience from which he has yet to recover), and subsequently a tour with the U.S. Coast Guard in Curtiss Bay, Maryland.

In 1960, Dr. Knight opened his own office in Warsaw, Virginia and is currently practicing dentistry in that location. He was appointed as a Commissioner from the First Congressional District in 1972 by the then Governor Linwood Holton.

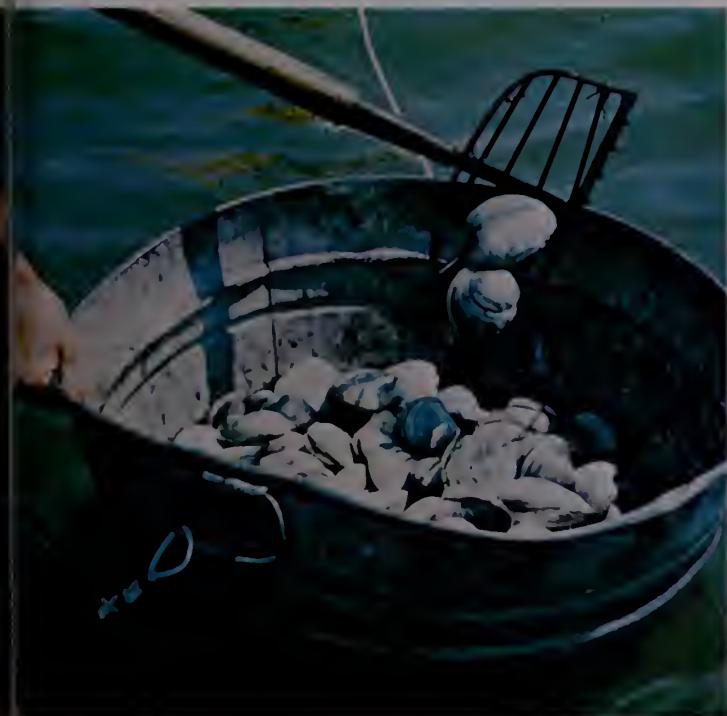
To him the most rewarding aspect of his assignment as Commissioner is the marvelous assortment of people with whom he comes in contact. These people are, in addition to the sportsmen and women of the Commonwealth and those he has met throughout the United States and Canada, the dedicated and devoted members of the Game Commission staff.

Mrs. Knight is the former Mary Lois Gilliam of Atlanta, Georgia. Dr. and Mrs. Knight have three children and they make their home in Warsaw, Virginia, where they are members of the Warsaw Methodist Church.



Clamming the Bay

Perseverance and skill are needed to get a clam from sand to rake to basket.



By SANDRA S. MEADOWS
Newport News

Samuel Johnson said that "Man seldom thinks with more earnestness of anything than he does of his dinner." When he came out with that well-spoken truth he must have been waiting for a meal of one of the most delectable creatures of the sea - the saltwater clam.

Living in the tidewater area of Virginia, just a few minutes from the beautiful, bountiful Chesapeake Bay, we are able to have fresh seafood often. Of all the good meals which come out of our Bay, we like clams the best. Every summer weekend finds my family of four in our boat, heading for our favorite clamming spots. The enjoyment we get from eating clams is multiplied because we rake our own. It is back-breaking work, but clams raked are superior to clams bought.

The clams on our coast are called quahaugs, and we find them in three sizes. The smallest are called Little Necks, the next size are Cherrystones, and the largest are chowder or soup clams.

The perfect clamming day comes in late spring when the water is warm enough that we don't become chilled, clear enough that we can see the bottom, and

calm enough that waves do not beat us. The water in our Bay, on a good clamping day, sparkles like a blue diamond and smells tangy good. The Chesapeake Bay can get nasty, and when it does the clamping becomes more difficult. But in late spring and early summer we jump overboard with enthusiasm and rake with vigor.

To get a large number of clams one needs a special rake. A clam rake is really a lethal weapon, but its 10 or 12 sharp prongs dig down into the sandy bottom of the Bay and find the clams if they are there. A clammer either pushes or pulls the long-handled rake, walking with it. When the rake hits a clam there is a special feel, and a grating sound that says "CLAM." The trick then, is to dig the prongs of the rake under the clam and lift it straight up so that the clam will fall back into the rake pocket. The rake is then lifted out of the water and the clam safely deposited in whatever receptacle the clammer has floating behind him. Some people use their pant's pockets. Serious clammers tie a washtub or a bushel basket in an inner tube to their belt loops.

It takes a trip or two to master the art of getting clams from sand to rake to basket, but it is a trick easily learned. Soon one can tell by sound or feel whether the object under the rake is a clam, or just a shell.

Occasionally, when the object at the other end of the rake fights back we know we have tangled with a "wampus cat," better known as a horseshoe crab. These are harmless creatures, but they look evil. I always toss them as far away as possible so that I won't step on them later.

Early in the season, we clam in our bathing suits and

A tasty meal of deviled clams is more than enough reward.

tennis shoes. Later, as the stinging nettles move into the warm Bay waters we find it necessary to wear a pair of old army fatigues, socks as well as shoes and a long-sleeved shirt. A nettle sting is not dangerous, but it is painful. Clothing helps deflect the long tentacles.

We try to get in the water two or three hours before low tide, clam through the ebb, and on into high tide as long as we can keep our heads and shoulders above water. The higher the water, the more difficult it is to handle the rake. Depending on the wind direction and what it does to the water in the Bay, we can clam from two to six hours.

Though our days on the water end all too soon, when we have clams to take home we leave the Bay with less regret. We know that our dinner is going to be superb. While my husband and sons clean the boat, I sort the clams. We will open most of them later in the week and freeze what we don't want for immediate use. But wet, tired and hungry, dinner for the evening is always uppermost in our minds. We will worry about our future meals later.

Versatility is the key word when it comes to eating clams. They can be eaten raw, on the half-shell, or steamed and dipped in drawn butter. And chowder, the all-time favorite, is as American as Manhattan or New England.

If you have never raked a clam, and the opportunity should present itself, try it. If you have never eaten clams, do yourself a favor and make the opportunity to try some. Both gathering and eating clams is a worthy experience.





YOUTH AFIELD



Edited by GAIL HACKMAN

SPRING CITATION WINNERS



Greg Spease of Richmond landed this 9-lb, 4-oz largemouth bass on April 4. The 10-year-old was using a spinning rod when he hooked the citation-sized fish in Chesterfield County.



This 13-lb, 9-0z channel cat was brought in by James Bangert, Jr. of Hampton. He caught it on April 20 at Penniman Lake.



The Shenandoah River yielded this 4-lb, 6-oz smallmouth bass on April 18. The lucky fisherman is Billy Shonk of Reston.

Did You Know . . .

Common garden snails have 14,175 teeth located in their tongue in 135 rows, with each row containing 105 teeth.

Are you trying to interest your family in gardening? Here's an easy way to start.

PLANTS FROM FRUIT TREES

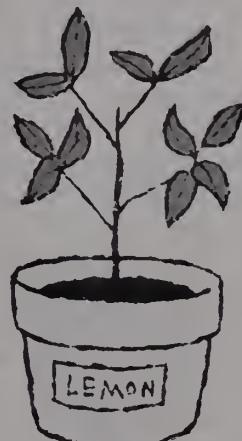
Here's What You Need:

1. Seeds from apples, lemons, oranges or grapefruit
2. 4-inch flowerpot
3. potting soil

Here's What You Do:

1. Choose seeds that are plump. Wash and dry.
2. Prepare flowerpot
3. Label pot with name and date
4. Fill with soil up to 1 inch from top.
5. Place several seeds of the same fruit 1 inch apart on surface of soil.
6. Cover with $\frac{1}{4}$ inch of soil.
7. Water carefully. Place in light or sunny spot.
8. Continue watering as needed.
9. Plants will develop in a time span ranging from 3 weeks to 3 months.

The suggestions on planting fruit trees were excerpted from Aileen Paul's book entitled KIDS GARDENING (Doubleday Books, 277 Park Ave., New York 10017; 1972, \$4.50.)



campground. I told her I was going to tie on a Hellbender and troll across an area where I had hung and lost a muskie several years before; Hewitt had told me he had also caught one there. I looked in my rod box and got out the stiffest rod I had with me; an Eagle Claw Pro Worm rod with an Ambassadeur 5000C reel loaded with 20-pound test Stren line. I could tell by my Hummingbird Depth Finder when I was over 20 feet of water and there was brush on the bottom. I let out about 40 yards of line and a knot clunked through the guides; I seldom use over 30 yards of line when bass fishing, so I just tie fresh line to the backing. I let out about 25 or 30 more yards and another knot went out. I stopped the reel and the Hellbender headed for the bottom. After traveling about 50 yards, I got what I thought was a strike; the lure probably hung on a tree limb. After pulling free, it went only about 10 yards and I got a savage strike. I knocked the 85-hp. Johnson into neutral; the rod almost went out of my hands as the big fish made a run away from the boat! I told Julie to get a good look at that, as a huge red tail came out of the water, because I had two knots out and I knew I'd lose it. All I could do was hold onto the rod and watch the line peel off the reel, the drag was singing my song. I had loosened it some because of the two knots, and now I was glad I had. The big fish finally wore down some and I got one of my knots back in; we didn't see it any more until it got about 30 feet from the boat. By then I had the other knot back on the reel so I felt a little better about landing the fish.

It made another hard run away from the boat; I told Julie to push the tilt 'n trim switch and get the engine out of the water. I finally got it to the boat and it headed around the bow; suddenly it made a run to the stern! If that engine had been in the water, it would have been all over. After leading the big toothy monster around the boat five times and watching it roll in the water like an eel; trying to shake the plug, I told Julie to put the bass-sized net in the water. She didn't like the idea because the fish really looked mean, and it was snapping those jaws. Finally she put the net in the water. I tried to lead the fish into the net, but the Hellbender was hung on the outside of the mouth and it hung in the net. I threw the rod down and grabbed the net handle; in the tug of war that followed, the 4-foot-long muskie straightened the hooks and fell free into the water! I thought I'd choke as my heart seemed to leap into my throat; I knew I'd lost it! To my surprise, the big fish just lay there motionless in the water; I finally came to my senses and scooped it up with the net and threw it into the boat. It bit the bottom out of the net, stuck its huge head through the hole and started snapping and jumping. I looked up and saw Lawrence Hewitt and his wife coming toward us in their boat.

He yelled, "I put you on 'em didn't I?" I said, "You sure did, but what do I do now?" He got into our boat

with his "muskie rope." He'd used that rope to tie all of his fish. He said he saw me fighting the muskie through his binoculars but didn't want to come over until I had landed it. We tied the fish in the boat and headed back to Pelican Point. Lawrence and I carried the muskie to the office and weighed it; the scales registered 29 pounds even and it measured 47½ inches long.

The next morning, Hewitt and I went out muskie fishing again. We hadn't hit but about three spots when he got a savage strike; I knocked the engine into neutral and wound my lure in. I watched as his saltwater rod bucked and the 30-pound braided dacron line peeled off his Penn reel. Suddenly the line seemed to go straight down. The big fish went down about 45 feet and hung up in the top of a tree. The fish got loose, but the Frog-colored Hellbender was still hung up. I let my Mo-jo plug knocker down to the end of the 40-foot rope and had to tie about 5 more feet of rope on before I hit the lure. We never got the lure loose, we finally had to break the line. Both of us wished we had just had a chance to see what that powerful brute looked like.

The next time I fished with Hewitt we were trolling our Hellbenders over a favorite structure when I hung up as we usually do every few minutes. He was retrieving his lure so I could get mine loose when I heard his drag scream. "I've got one!" he yelled. He put the pressure on the big fish and suddenly a huge boil near the boat started both of us. The fish had hit the Hellbender fairly close to the boat. Usually he lets the muskie fight for a long while, but this one struck too close to the boat. It came by the boat close enough for us to see that only his rear treble hook was holding it. Both of us knew the muskie was still full of fight, but we took a chance; as it ran by the boat, I scooped it up in my net. It put up a tremendous fight in the net, and as I pulled it in, one side of the net rim broke. I threw it down into the bottom of the boat and it broke the other side of the rim from the handle. It thrashed and leaped; I told Hewitt to get the claw hammer I had put at the back of the boat for such emergencies. I didn't want to see either of us hurt by the wildly thrashing brute. After a couple of blows to the head, the muskie calmed down enough for use to remove the lure and tie it in the boat. Hewitt said, "I'm glad you were with me on my seventh one." I replied that I was glad also; it's not every day that you have as much excitement fishing as we had just experienced. I'm sure both of us will remember that wild, leaping, jaw-snapping muskie for as long as we live. It weighed 26-lb, 2-oz, and measured 47 inches long.

I've had a couple of phone calls from Lawrence over the winter, and he's chomping at the bit for some more muskie fishing. I wouldn't be surprised if he broke the state record this summer. I told him I'd be happy to net it for him with the new, huge "muskie net" he sent me. So, look out Smith Mountain "Jaw!" Hewitt is hunting for you.

ON THE WATERFRONT



Edited by JIM KERRICK

ANCHORING — THE ART OF STAYING PUT

Many weekend sailors take to the water without an anchor aboard, but they shouldn't. As a safety device, the anchor can permit you to ride out a dangerous storm safely. As a convenience item, the anchor can help you "stay put" over a hot fishing spot, your favorite swimming area or alongside your campsite.

Selecting the right anchor depends on the size of your boat and personal preference, since most of the popular types work on nearly all types of water bottoms.

The concrete-filled coffee can aside, the most popular anchor among car-top boat owners is the mushroom anchor. It's cast iron, has no moving parts and it's cheap. It also does the job - given a light-weight boat and a soft sand or mud bottom. If you try to hold a large boat with a mushroom anchor, you'll need a much heavier, much larger model. Unlike other varieties, there's nothing to fold up for easy, compact stowage.

The old-fashioned, or yachtsman's anchor - the cap-emblem kind - has been saving ships for hundreds of years. The problem is that the anchor isn't as it's presented on the cap emblem - the bow-shaped arms on the bottom run perpendicular (not parallel) to the stock, or upper crosspiece. This presents a stowage problem that has only partially been overcome by new folding stock models that permit flat stowage.

Danforth and Northill anchors are vast improvements on the old fashioned anchor. They're lightweight, easy to stow and dig into the bottom quickly, largely because of their sharp, hinged flukes. The plow anchor works similarly, but it utilizes a single vee-shaped plow instead of two flukes.

Grapnel-type anchors, unless they're of the folding variety, aren't recommended for general boating

service. They work well enough on most bottoms, but stowage can be a major problem.

Before it can secure the boat, the anchor itself must be secured - at both ends. That means, preferably, a length of chain between the anchor ring and line, to guard against rope chafing on coral bottoms or rock projections; sufficient line; and an above or below-deck means of securing the on-board end. The anchor line should be run through deck chocks to prevent damage to stanchions and other above-deck fittings. When not in use, the anchor itself should be tightly secured on deck, or below.

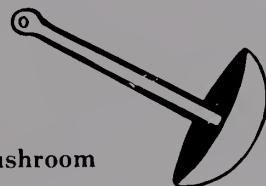
Once you've found your anchorage, a few simple steps will insure that your boat will stay put:

1. Lower the anchor over the side, don't toss it;
2. Once the anchor hits bottom, give it a tug to make sure it's set in the bottom, then back the boat away a bit;
3. In a high wind, make sure the anchor isn't dragging - try it over again if it doesn't hold the first time;
4. To release the anchor, drive the boat slowly toward the spot where the anchor is, and begin hauling up carefully.

When anchoring on a rock bottom, don't if there's any way you can avoid it. You might try securing the anchor chain to the foot of the anchor, running the chain parallel to the shaft and tying it there with twine. Theoretically, you just drive forward, the twine breaks, and the flukes free themselves. It doesn't always work that way, but it should, and it's cheaper than cutting the anchor line.

One last reminder: When anchoring near other boats or obstructions, allow enough room for the length of your boat and the length of the line - the wind could reverse directions.

Types of Anchors



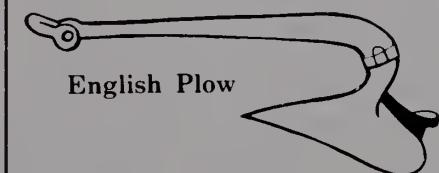
Mushroom



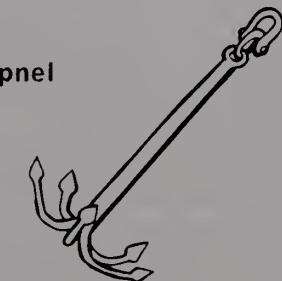
Northill



Danforth



English Plow



Grapnel

When the dam was proposed, conservation groups and sportsmen rallied together to oppose the flooding of acres of wildlife habitat. Studies of possible and probable adverse effects on the ecology of the area were urged and the project rejected. North Carolina interests were involved because a good portion of the waterway flows in that state. Major alteration on any upper portion of the stream would have an effect on the rest. The impact on the ecology of adjacent bays and sounds, which are in delicate balance and interdependent, might be staggering. There is a project, in lieu of the dam, which Chesapeake would implement. This plan has been approved for pumping water directly from the river without a dam. There are obvious dangers in this, but there is one positive consolation. If the river is used as a source of drinking water, safeguards would be in order to stop pollution that is already spreading. Insecticides probably drain into the river from nearby farms. Garbage is dumped along the river by both civilians and the military. Constant drainage projects keep silt flowing into the stream.

There are 10 to 12 miles of river between highway 168 and Tull's Bay. A mile or so north of the Virginia-North Carolina line Chesapeake has acquired a wooded area of considerable acreage for use as a park. For a time there was a remote chance that Northwest River would gain scenic river status. Some of the guidelines for this have long since been circumvented and that hope died. What the park will do remains to be seen. Not too many seasons ago there were a few osprey nests down river. These are no more. Once, not too long ago, an occasional bald eagle could be seen here. The river is a mite perilous after dark, having claimed a number of victims over the years. Besides the obvious hazard of small boats running around without lights, there are many underwater logs and stumps, narrow passages and landmarks that look alike after nightfall. The water is the color of strong tea. Juniper water it's called. In early times, it is told, seafarers sent parties up river to obtain drinking water that would not spoil for long periods of time.

The logging rape has come and gone. Evidence of its effect is not apparent, because few of us were around before it took place. Remnants of piers and corrugated roads remain, but are rotting and disappearing.

Wildlife; amphibians, animals, birds, reptiles, flowers, ferns and trees are still profuse in places along the river. Some species are quite rare and a genuine thrill to behold. It would make me happy to be able to say that they would all be there for you to see when you come. But there is doubt in my mind whether coexistence between man and nature is possible here. Northwest River is in the very shadow of the growing Hampton Roads megalopolis. It is truly sad that our children will not see and know the river as we did. But of course, we haven't seen as those before us.

ther or not your forecast was correct. Make your forecast short-range for greater accuracy.

Mechanical weather detectors (thermometers, barometers, weather vanes, psychrometers, anemometers) will give you constant, accurate readings of temperature, pressure, wind directions, dampness and wind speed. With the exception of the thermometer, all can be made at home from scrap metal, wood and other available materials. But you cannot carry all this equipment with you every time you leave the house. There are a good many natural signs and old weather sayings that indicate these changes in the weather. Certain plants, animals, insects and other objects in the natural world react to these changes.

Counting cricket chirps can give you a fairly good temperature reading. Crickets chirp faster as the temperature rises. If you add 37 to the number of chirps in 15 seconds you will have the current temperature. I have also heard that rhododendron leaves react to temperature changes. They are supposed to droop at 40°F, curl at 30°F, darken and shrivel at 20°F.

When air pressure rises, smoke lifts straight up and fish are more active, swimming nearer the surface. The ice on ponds and lakes will begin to crack and birds fly high.

Lowering pressure that precedes rain or a storm causes animals and birds to become restless and noisy. Sound travels much further, forcing certain birds and bats with sensitive ears to seek relief by flying lower where pressure is high. Odors seem stronger, or a smell like a mushroom cellar permeates the air.

In drier weather old tree bark tightens and snaps. So do old barns and old furniture.

In backing or non-prevailing winds tree leaves show their backsides, smoke rises slowly or curls down and ants scatter.

There is also some truth to those old weather proverbs Grandpa used to tell. For decades forecasting was an art of shrewd observation practiced by farmers, sailors, hunters, fishermen. Meteorological studies show that the signs concerning the wind, the humidity and the complexion of the sky and sea are reliable.

Red sky in the morning sailors take warning,

Red sky at night is the sailor's delight

is true because the red tinge in the morning is caused by the sun shining on rain clouds approaching from the west. The evening red sky signals the clearing of the western sky. Since weather travels from west to east, you can expect fair weather next day. Can you name other weather proverbs? There are hundreds.

This is only the minimum information for becoming a weather prophet. As you become more aware of weather, just to look at a golden and scarlet sunset or a canopy of mist uncovering a grove of maples is not enough. Tucking these scenes away for reference is a great reward - a chance to look into the future.

the DRUMMING LOG

Edited by MEL WHITE

TROUT ISSUES PRINT

Projections show that in the next 20 years, Virginia may lose half of its remaining cold water streams through pollution, mining, clear cutting and other treats.

The Virginia Council of Trout Unlimited, in conjunction with the American Fisheries Society at Virginia Polytechnic Institute, has established a scientific research project on the Bullpasture River. They're studying water, chemistry, food supply and habitat of the stream. The much needed information will help other agencies in making more knowledgeable decisions in the proper management of the Bullpasture as a wild trout stream.

They also have monitoring stations on each of 7 key streams that may be threatened by pollution.

The Virginia Council has initiated a program in Western Virginia to restore limestone streams degraded by agriculture. A pilot project in Augusta County will cost \$36,000.00 to restore 3½ miles of trout stream that will be open to the public.

To successfully carry out a program of cold water conservation, it is necessary to raise funds for field work.

The Virginia Council of Trout Unlimited, over the next three years, will issue three special limited edition prints from an original work of art by a Virginia wildlife artist, of the three trout found in our streams.

All proceeds will go directly to the Virginia Council of Trout Unlimited.

The first print is by Carl C. "Spike" Knuth. It is of Virginia's native brook trout. The print will be issued in a limited edition of 750, of which 250 will be remarqued, signed and numbered. 500 will be signed and numbered. Val Glare Inc., is handling the printing and distribution, and Prints may be ordered by writing: Val Glare Inc., 114 East Franklin Street, Richmond, Virginia 23219.



Governor Mills E. Godwin, Jr. receives Print Number One of "Brookie Surprise" done by wildlife artist Carl C. "Spike" Knuth, from members of Trout Unlimited who are, left to right, Harold V. Tate, Jr., President of the Virginia Council of T.U., Governor Godwin, Alan E. Hoover, Virginia Capitol T.U. Chapter President, and Robert B. Mayor, T.U. member and sponsor of the project in which Trout Unlimited will sell the paintings to raise money for fisheries development projects.

BAKER TO RUN CLINCH MOUNTAIN W. M. A.



John R. Baker, 23, has been hired by the Virginia Game Commission to manage its Clinch Mountain Wildlife Management Area. Baker is a 1975 graduate of North Carolina State University and has a BS in Forestry and a BS in Wildlife Management.

Baker, a native of Reidsville, Virginia

North Carolina, will be stationed on one of the Commission's most picturesque areas. This mountainous southwestern Virginia region features scenic falling streams and high trout lakes. Baker will live on the area with his wife, Amy and their daughter Evelyn.

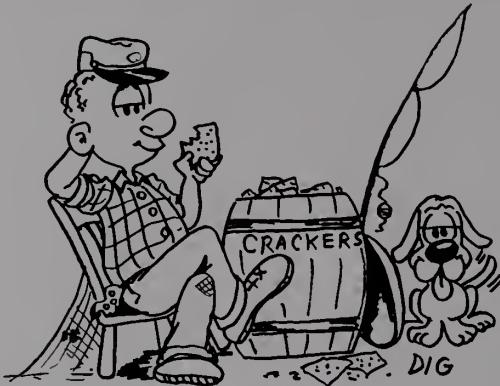
WARDENS TAKE FIRST PRIZE

Lewis Brandt, Education Supervisor for the Patrick Henry District and Spencer Winn, Game Warden for Goochland County received a first prize blue ribbon and a \$10.00 cash award for the "most educational exhibit" at the May 8 Goochland Day Bicentennial celebration. The day-long affair featured a parade and series of exhibits with a bicentennial theme. Several thousand people attended, many of them dressed in authentic costumes and driving covered wagons. The prize-winning Game Commission exhibit featured an exhibit of muzzle loading duck guns and a series of display boards on duck identification, wildlife food planting, and boating safety.

IT APPEARS TO ME...

A Conglomeration of Comments, Cumshaw and Cogitation

BY CURLY



.... A PERSON OUGHT TO HAVE ONE!

These days there is a wealth of practical, valuable and downright handy information available with much of it to be had 'just for the writing.' For example: The Department of the Interior has *free* (single) copies of a new publication entitled "Collecting Rocks." This gem of a leaflet is available from the U.S. Geological Survey, Distribution Branch, 1200 South Eads St., Arlington, Virginia 22202.

And then there is the National Wildlife Federation's timely contribution to the Bicentennial. These fine folks have published a 40-page booklet called '76 Places to Visit: The Conservationist's Guide To Historic Landmarks. In it a person can easily locate historically significant and interesting spots all across the country. Single copies are free from National Wildlife Federation, Educational Services (Dept. A), National Wildlife Federation, 1412 16th Street, N.W., Washington, D.C. 20036. Those of you with preschool or elementary school children (or grandchildren) might look into two dandy items which are free for the asking. They are pamphlets called "There Lived a Wicked Dragon" and "Fun With the Environment." Contact the Public Affairs Division, U.S. Environmental Protection Agency, Room 2203, John F.

Kennedy Federal Building, Boston, Massachusetts 02203.

Brand new on the outdoor scene is the just opened American Tackle Corp., P.O. Box 98, Melbourne Beach, Florida 32951. ATC's uniqueness is the fact that as a rod manufacturing company it also features rods totally geared for women. Known as the "Sandy Series" these rods are smaller and are shaped for a woman's hand.

.... AND FOR YOUR BOOK SHELF

Well, she's done it again. For the second time in not more than a few moons, Joan Cone has published another in a series of helpful, handy and ultra simple cooking pamphlets. This one, her latest, is *How To Cook Fresh Water Fish*. In it you will find recipes for crappie, catfish, walleye, bream, bass, trout and many others both small and large. Its a winner along with her first pamphlet, *Crockery Game Cooking*. Each of the pamphlets sells for \$1.00 postpaid. Write to Joan Cone, P.O. Box 242 (Department S) Williamsburg, VA. 23185.

Charley Dickey, a fellow who has been down the pike and has gathered much savvy along the way, has come up with a book on dove hunting that should warm the cockles of your heart. For \$2.95, Charley Dickey's *Dove Hunting* 112 - page paper-bound book is an indispensable

addition to the book shelves of either those of you that have burned more powder than you care to admit, or for you gals and guys that are new to the game. Not much over one month old the book was published by Oxmoor House, Box 2262, Birmingham, Alabama 35202.

Former Education Chief of the Virginia Game Commission (1947-1961), Joseph J. Shomon has authored yet another book. This one, titled *Beyond The North Wind*, gives the reader a personal and sensitive view of the interrelated complexities experienced by man, wildlife and plants in the struggle for survival in the Arctic Tundra. Cost is \$10.00 from A. S. Barnes & Co., Inc., P.O. Box 421, Cranbury, New Jersey 08512.

Henry Clepper, charmingly as always, in his newest book the 92 page illustrated *Crusade For Conservation* — describes the development of the state forest system and the history of forest conservation. Published by the American Forestry Association, 1319 Eighteenth St. N.W., Washington, D.C. 20036, Price \$10.00.

Free lance Virginia writer artist Jane Shaffer of Lynchburg is planning a July 1976 publication date for her book *Peter Francisco-Virginia Giant*. Francisco, a Revolutionary War hero was one of the self-made giants of the 18th Century. Pre-publication price is \$5.50 from Moore Publishing Co., P.O. Box 3143, West Durham Station, Durham, N.C. 27705.

.... AND THEN

I want to call attention to the cartoon-caricature which graces the top of this page. It is the fine handiwork of Diane Immanuel Grant from the Game Commission's Education Division. Thank you, DIG.

Bird of the Month:



CEDAR WAXWING

By JOHN W. TAYLOR
Edgewater, Maryland

There are but three species of waxwings the world over. One inhabits eastern Siberia, another the northern portions of both Europe and North America. The third is the cedar waxwing, found throughout United States, Mexico and parts of Central America. They comprise a family unique and of exceptional beauty.

Their loveliness does not derive from color alone, though their soft grey-browns and yellows have special appeal. More striking is the unusually delicate texture of the plumage, which imparts an indescribable silky smoothness. These features combine with the slim, upright crest and a black mask to impart an air of distinguished elegance. Complete the picture by adding to these physical attributes a confiding and sociable manner.

Red, tear-shaped, wax-like tips of the secondary flight feathers give them their name. Not all individuals show this character, and neither its cause nor its function is understood.

Waxwings are not only partial to cedar berries. They have a special fondness for cherries, and like the fruit of honeysuckle and of the common privet hedge. Mulberries are another preferred item. Strongly insectivorous as well, they are adept at hawking bugs from a vantage point, flycatcher fashion.

Waxwings have singular nesting and migratory habits. They seem rather desultory in courtship, and often consort in flocks until mid-summer, long after other species have mated and raised young. Sometimes domestic affairs are postponed until early fall.

Partially open sites are preferred for nesting. Orchard trees are favored, as are the sycamores and willows that border streams. The structure itself is a rather haphazard, affair, carelessly put together with dry grasses, weed stalks and leaves.

Waxwings are not considered true migrants, species that move regularly north and south with the change of seasons. They retire from the northern portions of their range at the onset of cold weather, but generally they wander helter-skelter, lingering where food is plentiful and accessible. Yet there must be some genuine migratory tendency as well: waxwings have come aboard ships at sea where they could hardly have been looking for berries.

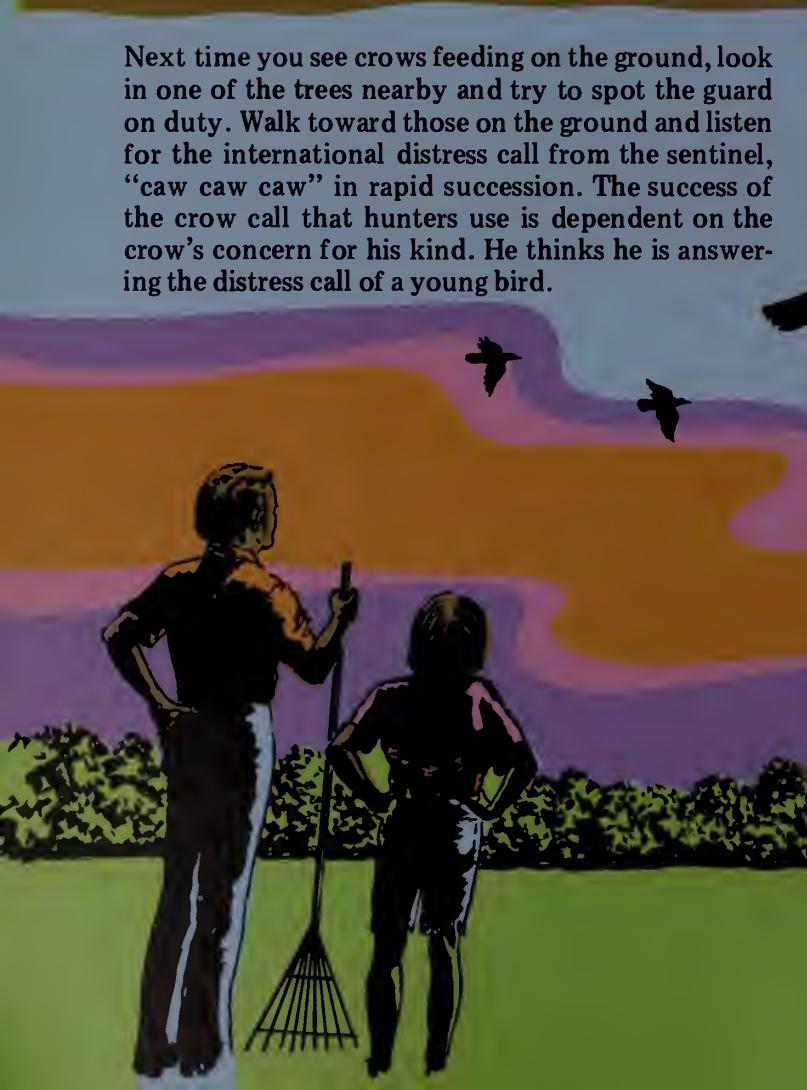
The higher mountains of western Virginia support an abundance of nesting waxwings; they are nearly as common in the valleys west of the Blue Ridge. Eastward, they become less frequent as a breeder, and they rarely summer in Tidewater. At other season, they seem equally distributed statewide.

KNOW the GREAT OUTDOORS

by Gil



Although the good that crows do usually outweigh the bad, this is hard for a farmer to remember when his young corn is pulled up by the roots. Crows will swear that a crow can recognize a gun from a mile away, but I have tried carrying a gun in my pocket when I were a gun; it didn't fool them. An old crow once said, "he can tell that you have a gun in your pocket even if it is under 10 bags of wheat with a gun in it on top."



Next time you see crows feeding on the ground, look in one of the trees nearby and try to spot the guard on duty. Walk toward those on the ground and listen for the international distress call from the sentinel, "caw caw caw" in rapid succession. The success of the crow call that hunters use is dependent on the crow's concern for his kind. He thinks he is answering the distress call of a young bird.



Owls occasionally raid crows at roost. To get revenge, crows love to attack an owl trying to get a good days sleep. If you have a stuffed owl, put him up in a tree where his silhouette can be clearly seen. Hide yourself completely and watch. Crows seem to lose their good sense when it comes to a chance to torment an owl.

Crows are fully protected by law, except during legal season. Wednesdays, Thursdays, Fridays and Saturdays, August 1, 1976 — February 28, 1977.